THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LXIII. SATURDAY, DECEMBER 9, 1893. No. 24.

ORIGINAL ARTICLES.

BLOODLESS AMPUTATION AT THE HIP-JOINT.

A Report of Forty Cases by the Author's Method.[1]

BY JOHN A. WYETH, M.D.,

PROFESSOR OF SURGERY IN THE NEW YORK POLYCLINIC; ATTENDING SURGEON TO MT. SINAI HOSPITAL; CONSULTING SURGEON TO ST. ELIZABETH HOSPITAL, ETC.

As recently as 1881 Professor John Ashhurst, Jr., one of the highest authorities in modern surgery, wrote:[2] "The removal of the lower limb at the coxo-femoral articulation may be properly regarded as the gravest operation that the surgeon is ever called upon to perform, and it is only within a comparatively recent period that it has been accepted as a justifiable procedure."

This author further voices the accepted opinion of surgeons when he adds: "The most pressing risk in any operation at the hip-joint is that of hemorrhage."

Beginning with aortic compression by digital or mechanical means, as advised by Pancoast, Lister, Abernethy, and others, and later the intra-rectal lever of Davy for compressing the common iliac artery against the pelvis, the first really practical and valuable suggestion for controlling hemorrhage was the figure-of-eight elastic bandage of Jordan Lloyd,[3] which included the posterior aspect of the thigh in its grasp and then passed over the rim of the pelvis, making compression of the external iliac by means of a roller bandage placed beneath the elastic bandage and over this artery. This was in fact a figure-of-eight bandage around the thigh and abdomen.

So far back as 1865,[4] Dr. A. Hewson, an American surgeon, first employed acupressure in an amputation at the hip-joint. There was much loss of blood before the needles were placed and the patient died without reaction. In 1880 (July 28th) Trendelenburg, at the suggestion of Newman,[5] also employed acupressure as a means of controlling hemorrhage in hip-joint amputation:

"A steel needle 38 cm. long, 6 mm. broad, biconvex on cross section, and in the thickest portion or center 2 mm. thick, was inserted just below the anterior iliac spine and carried in the direction of the perineum, passing between the neck of the femur and the vessels, and emerging on the inner aspect of the thigh, near the perineo-femoral crease. A figure-of-eight ligature was then thrown over the ends of the needle and in front of the thigh, thus constricting the femoral artery and vein. The limb having previously been emptied of blood by the application of Esmarch's bandage as high as the middle of the thigh, a long knife was carried through the front of the thigh 2 cm. beyond the needle and parallel with it (Lisfranc), and a flap formed by cutting by transfixion. The vessels were then tied, the needle and figure-of-eight loop removed, and the head of the femur disarticulated. The needle was again introduced behind the bone, the figure-of-eight carried posteriorly, and the posterior flap then formed."

In 1886 (August 10th) Dr. Muscroft, of Cincinnati, employed a similar method:[1]

"A needle one-eighth of an inch wide, slightly bent at the point, about the thickness of a dime and four inches long, was introduced perpendicularly into the front of the thigh about an inch and a half below Poupart's ligament. The exact point of entrance was one-fourth of an inch internal to the combined sheaths of the vein, artery, and nerve. The point was pushed beyond the vessels, then turned outward until the needle had passed beyond them; the point was then pushed out through the integument. The needle was then behind the vessels and nerve. A piece of cord was passed under the heel and point of the needle, forming a figure-of-eight ligature."

Myles,[2] of England, advised a steel skewer to be passed through the thigh, the point entering an inch below Poupart's ligament, going external to the femoral artery and internal to the neck of the femur, emerging a little above the gluteal fold. An India-rubber cord in figure-of-eight fashion was then to be thrown over the ends of the skewer and the inner aspect of the thigh. The amputation was by lateral flaps.

In theory and practice any method of constriction that only controlled a part of the blood-supply at the hip, when, in the formation of flaps, the other portion was exposed to hemorrhage, must prove less satisfactory than one that permits the operation to be completed with absolute compression of every vessel passing the level of the coxo-femoral joint.

In 1888 I removed the outer half of the clavicle, the glenoid, acromion, and coracoid processes, and part of the body of the scapula, together with the upper extremity, of a patient suffering from a large sarcoma of the upper end of the humerus. Not wishing to perform a preliminary deligation of the

[1] Read at the meeting of the New York State Medical Association, October, 1893.

[2] International Encyclopedia of Surgery, vol. i, p. 669.

[3] Lancet, 1883, p. 897.

[4] American Journal of the Medical Sciences, vol. lii, p. 32.

[5] Archiv für klinische Chirurgie, 1881, B. xxvi, S. 861.

[1] Cincinnati Med. News, April, 1887.

[2] British Med. Journ., November 9, 1889.

subclavian in its third division, I transfixed with a stout mattress-needle the major pectoral muscle about three inches from the shoulder, and, at about the same distance from the joint on the *dorsum scapulæ*, I introduced a second needle in such a way that when I carried a strong rubber tube several times around the shoulder above these needles with strong traction, the compression was so great that hemorrhage was well-controlled during amputation. It occurred to me at the time that the same plan was equally feasible at the hip.

In 1890 I had the good fortune to apply the method successfully, and as, in the light of subsequent experience, I now believe, to establish an operation in which hemorrhage at the hip-joint is as safely and easily controlled as at the middle of the thigh. In 1890 I demonstrated the method at the meeting of the American Medical Association at Nashville, also at the International Congress at Berlin, and at Louisville before the Mississippi Valley Medical Association.

Under strict antisepsis the operative technique is as follows:

1. With the patient in the usual position for a hip-joint amputation, the limb should be emptied of blood either by elevation of the foot and lowering of the trunk, or by the Esmarch bandage applied from the toes to the trunk. Under certain conditions the bandage can be only partially or may be not at all applied. When a tumor exists or when septic infiltration is present, pressure should only be exercised not quite to the diseased portion for fear of driving septic matter into the vessels. After injuries attended with great destruction, crushing, or pulpification, of course the Esmarch bandage is not applicable, and one must trust to elevation to save as much blood as possible.

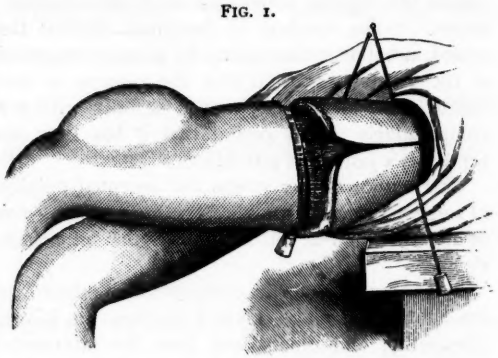
2. While the member is elevated or before the Esmarch bandage is removed, the *rubber-tubing* constriction is applied.

The object of this constriction—and it is the chief point in the method—is *the absolute occlusion of every vessel at the level of the hip-joint safely above the field of operation.*

To prevent any possibility of the tourniquet slipping I employ two large mattress-needles or skewers, about three-sixteenths of an inch in diameter and ten inches long, one of which is introduced one inch below the anterior superior spine of the ilium and slightly to the inner side of this prominence, and is made to traverse superficially the muscles and fascia on the outer side of the hip, emerging on a level with and about three inches from the point of entrance.

The point of the second needle is made to enter one inch below the level of the crotch internally to the saphenous opening, and, passing squarely through the adductors, comes out an inch below the tuber ischii. The points are at once shielded by bits of cork to prevent injury to the hands of the operator. No vessels are endangered by these skewers. A piece of strong, white-rubber tube, half an inch in diameter and long enough when tightened in position to go five or six times around the thigh, is now wound very tightly around and above the fixation-needles and tied. If the Esmarch bandage has been employed, it is now removed. Dr. Lanphear succeeded in holding the constriction in place with only one (the outer) needle. Dr. Deaver was equally successful in holding the tubing well up by two strips of roller bandage, one before and one behind, held by an assistant, and thus dispensing

FIG. 1.



The needles and constrictor applied. Circular and longitudinal incisions for skin-flap.

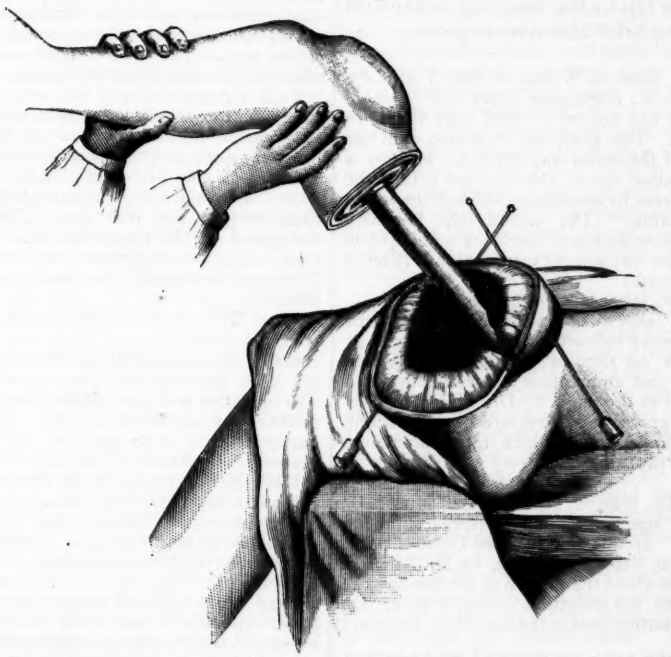
with the needles. Since the needles are, however, absolutely safe, easy to obtain and inexpensive (a piece of telegraph wire, even, will suffice), and entirely out of the way, I do not see any benefit to be derived from their disuse. On the contrary, I should be afraid to operate without them.

3. In the formation of flaps the surgeon must be guided by the condition of the parts within the field of operation. When permissible the following method seems ideal:[1] About six inches below the tourniquet a circular incision is made, and this is joined by a longitudinal incision commencing at the tourniquet and passing over the trochanter major. A cuff that

[1] At Bardstown, Kentucky, in August of 1806, Dr. Walter Brashear amputated at the hip in a negro lad, seventeen years old, on account of a severe fracture of the femur and laceration of the soft parts. A circular incision was made, the muscles divided well below the hip-joint, and the vessels secured as the operation progressed. Then a longitudinal incision along the outer side of the limb exposed the remainder of the bone, which, being freed from its muscular attachments, was disarticulated at the socket. (Prof. D. W. Yandell, in American Practitioner and News, 1890.) Dieffenbach's name has been prominently associated with this operation among surgeons, but Dieffenbach did not take his degree in medicine until 1822, sixteen years after the pioneer Kentuckian had performed his operation, the first hip-joint amputation performed in the United States.

includes the subcutaneous tissues down to the deep fascia is dissected off to near the level of the trochanter minor. At about the level of the trochanter minor the remaining soft parts, together with the vessels, are divided down to the bone by a circular cut, and, in order to facilitate the search for the vessels, the soft parts are rapidly removed from the femur for several inches below the line of the divided muscles. At this stage of the operation the larger vessels, *veins* as well as arteries, should be tied with good-sized catgut.[1] As suggested by Professor Murdoch, of Pittsburg, I now leave the entire extremity intact and use the full length of the limb as a lever in dislodging the head of the bone.

FIG. 2.



Cuff of skin and subcutaneous fat turned back, muscles divided at level of small trochanter, bone partly stripped, and large vessels exposed for deligation.

When the larger and easily-recognized vessels have been secured, the muscular attachments to the upper extremity of the bone are lifted off with scissors or knife, keeping along very close to the bone. Holding the soft parts away with retractors, the capsular ligament is exposed and divided in its circumference. Forcible elevation, abduction and adduction of the thigh permit the entrance of air into the socket, and, at the same time, rupture the ligamentum teres, and the disarticulation is thus easily and rapidly effected.

Properly conducted up to this point, not a drop of blood has escaped, except that which was in the limb below the constrictor when this was applied. If now the tourniquet be carefully and gradually loosened each bleeding-point may be determined and the forceps applied as required, until the tube is entirely removed.

Should any difficulty be encountered in the effort at enucleation (which is scarcely possible), the same precaution in securing all bleeding-points should be exercised in removing the tourniquet, and enucleation completed with the tourniquet out of the way.

4. There remains the closure of the wound, with the usual precaution of drainage. I prefer silkworm-gut for suture-material and one good-sized rubber drain from the acetabulum out at the most dependent part of the wound.

When by reason of the proximity of a neoplasm or the destruction of the parts by accident or disease, this ideal method is not practicable, any modification may be practised, preference being given to the incision that keeps furthest from the tumor or gives the healthiest flaps. When there is not sufficient material for perfect closure it is even safer to err on the side of an unclosed wound and trust to granulations or grafting for ultimate closing of the wound.

Before concluding the consideration of the tech-

[1] I employ catgut in all cases and have never had a secondary hemorrhage.

nique I wish to emphasize a point of great importance. When, by reason of severe hemorrhage before operation, or when from any pathologic anemia or condition of weakness, the operation should be rapidly completed and the small amount of blood that will necessarily be lost from capillary oozing should be saved, suturing of silkworm-gut should be rapidly introduced, the wound packed with hot sterilized plain gauze (not iodoform or bichlorid gauze), and the sutures temporarily tightened for snug compression of the wounded surfaces. This packing at once controls all oozing and can be removed, and in from twenty-four to forty-eight hours after reaction the sutures finally secured.

I have been able to obtain the histories of forty amputations at the hip by the foregoing method, of which the following brief histories are given:

CASE I.—By Dr. John A. Wyeth, of New York City, in 1890. Rev. J. H. S., thirty-nine years old. Twelve years previously he had noticed a small, hard tumor in the popliteal space. This gradually increased until the whole lower half of the femur was involved, forming a large osteo-sarcomatous tumor. On February 4, 1890, the first step was completed by amputation through the femur at the lower trochanter. The second step, February 20th, consisted of enucleation of the neck and head of the bone. Recovery was without interruption. (This is the first case on record.)

CASE II.—By Dr. John A. Wyeth, 1890. From J. G., a male, thirty-four years of age, a neuro-sarcoma of the internal popliteal nerve below the knee was removed by Dr. D. M. Stimson, on October 15, 1888. There was recurrence *in loco*, and amputation followed at the middle and lower third of the thigh by Dr. Wyeth in February, 1889. The growth again recurred in the stump in the winter of 1889–90, and in March, 1890, amputation was performed at the hip. Recovery was without interruption.

CASE III.—By Dr. John A. Wyeth, 1892. Miss J. B., seventeen years of age, had an osteo-sarcoma of the left femur at the knee. It was first noticed October, 1891. Amputation was on February 5, 1892, by Dr. Allen, of Cleveland, Ohio, at about the middle of the femur. The wound never healed, the growth recurring at once. On April 22, 1892, I disarticulated at the hip-joint. Recovery followed.

CASE IV.—By Dr. M. J. Ahearn, of Canada, 1892. The patient was a male, twenty-two years of age, with osteo-sarcoma of the femur. The man had acute nephritis, passing four and a half grams of albumin to every liter of urine. The operation was practically bloodless, and the patient recovered.—*L'Union Méd. de Montreal*, 1892.

CASE V.—By Dr. J. B. Murdoch, of Pittsburg, Pa., 1892. The patient was a male, seventeen years of age, with osteo-sarcoma of the thigh. Death from shock followed twenty-two hours after the operation, which was performed February 20, 1892.

CASE VI.—By Dr. W. W. Keen, of Philadelphia, 1892. The patient was a female, thirty years old, with an enormous osteo-sarcoma of the left femur extending from the knee to within ten inches of the hip. The first symptoms of the trouble dated back seventeen months. Operation was on January, 1892, the patient being five months pregnant. Recovery was uninterrupted.

CASE VII.—By Dr. Frank Hartley, of New York City, 1892. The patient was a female, twenty-six years old. On March 19th a tumor of the tibia, near the ankle-joint, was incised, and proved to be a giant-cell sarcoma. On March 25th amputation at the knee showed the femur to be involved. Amputation at the hip was performed May 14, 1892. There was no hemorrhage and no shock. Primary union followed, and the patient was discharged cured June 22, 1892.

CASE VIII.—By Dr. Charles McBurney, of New York City, 1890. A male, thirty-four years old, had sarcoma of the lower and middle thirds of the right femur, infiltrating the muscles. Amputation at the hip was performed May 3, 1890. The limb was elevated to empty it of blood, and Esmarch's bandage was not employed. "The hemorrhage was extremely light, and estimated as being perhaps an ounce of blood in all, and the operation in consequence was finished with great rapidity." Rapid and uninterrupted recovery followed.

CASE IX.—By Dr. J. McFadden Gaston, of Atlanta, Ga., November, 1890. A man, the age not given, had an enormous osteo-sarcoma of the left femur. The tumor weighed seventy-three pounds. The external iliac artery was also tied. There was profuse diarrhea twenty-four hours after the operation, and this continued for ten days. The man died on the twenty-sixth day after the operation from septicemia.

CASE X.—By Dr. A. J. McCosh, of New York City, 1892. The patient was a male, twenty-seven years of age, with an osteo-sarcoma of the femur involving the head, the neck, and the upper fourth of the shaft.

CASE XI.—By Mr. R. L. Swan, of Dublin, Ireland, 1892. A female, nineteen years of age, had had morbus coxarius from her fifth year. There was pathologic dislocation of the caput femoris. The thigh and leg were extensively infiltrated and burrowed by sinuses. There was extremely little shock, and a good recovery followed.

CASE XII.—By Dr. A. M. Phelps, of New York City, 1891. A male, fifty-five years old, had recurrent sarcoma of the middle third of the thigh, the clavicle having been removed two years previously for sarcoma. The operation was concluded in fourteen minutes. The patient was extremely anemic. Not more than one ounce of blood in all was lost. He recovered uninterruptedly. Operation performed at Charlottesville, Va.

CASE XIII.—By Dr. A. M. Phelps, December, 1891. A male, twenty-four years of age, had hip-joint disease of long standing. The operation was unattended with shock, rise of temperature, or bleeding, and the patient was up on crutches in two weeks.

CASE XIV.—By Dr. A. M. Phelps, 1892. A male, sixteen years old, had extensive osteitis of the whole lower extremity of two years' duration, and was almost moribund from septic absorption. Portions of the pelvic bones, which were involved, were also removed. No blood was lost. The patient died from exhaustion twelve hours after the operation. Dr. Phelps advised against operation in this case, and only did it at the urgent solicitation of the parents.

CASE XV.—By Dr. G. A. Baxter, of Chattanooga, Tenn., 1891. The patient was a negro lad, seventeen years of age, with compound comminuted fracture and pulpification of the right leg and foot, and of the left lower extremity as high as the middle of the thigh. He had been hauled in a wagon over a rough country road for two miles, and was found by Dr. Baxter in profound shock. So soon as reaction had set in, amputation of the right leg at the middle and of the left thigh at the hip-joint was performed. "Wyeth's technique was closely followed." There was no loss of blood, and disarticulation was easily effected. The patient rallied encouragingly, but four hours after the operation, contrary to the directions of the doctor, he raised himself to the sitting posture and instantly expired. Heart-failure was evidently induced by loss of blood prior to the operation, and by profound shock following the injury, to which was added

the shock of operation. "The control of hemorrhage by the method employed was perfect."

CASE XVI.—By Dr. W. B. Johnston, of Ellicottville, N. Y., 1892. The patient was a male, thirty-nine years old, who had sustained a railway injury in which the foot, the leg and thigh, to a point above the middle third, were "pulped," and the femur divided near the trochanter minor. "There was no arterial bleeding whatever, and only slight oozing from the muscles." The man died from shock and exhaustion ninety hours after.

CASE XVII.—By Dr. J. D. Thomas, of Pittsburg, Pa., 1891. The patient was eighteen years of age. On July 31st, while attempting to grasp with tongs a red-hot bar of iron passing through the rollers, he was struck by the rod in the left thigh. The bar penetrated the tissues and seared through the saphenous and femoral veins and the femoral artery. The loss of blood was at once almost fatally profuse. Dr. J. M. Duff, who first saw the man, placed a compress and bandage over the wound. As the patient rallied slightly, bleeding occurred chiefly from the proximal end of the divided femoral vein. The wound was packed by Dr. Thomas with iodoform-gauze, and over all was placed a cotton bandage. Heat was applied locally and stimulants administered hypodermatically. On the third day amputation at the hip was proposed on account of threatened gangrene, but was not permitted. Ligatures were applied to the large vessels. On the seventh day amputation was performed. The man rallied well for thirty-six hours, then failed rapidly, dying eight and one-half days after the injury.

CASE XVIII.—By Dr. W. F. Fluhrer, of New York City, 1890. A female, eighteen years of age, had osteo-sarcoma of the left thigh of six months' history. There had been spontaneous fracture of the thigh at the middle, on April 26, 1890. Amputation at the hip was performed on May 2d, and on July 1st the patient was up and out on crutches.

CASE XIX.—By Dr. Merrill Ricketts, of Cincinnati, O., 1893. A female, twenty-three years of age, had osteo-sarcoma of the right thigh, and was operated upon on February 2, 1893. "Operation bloodless." She recovered promptly.

CASE XX.—By Dr. C. A. White, of Atlanta, Ga., 1891. A male, twenty-three years, had osteo-sarcoma of the left femur, involving the whole length of the shaft. The tumor was four times the size of the thigh. Operation was performed on May 26, 1891. The patient recovered rapidly, gained twenty pounds in weight, and by June 22d was up on crutches. He was seized with acute pneumonia on the 27th day and died five days later. The pneumonia was independent of the operation, as the wound was entirely healed a week before the onset of the malady that carried him off.

CASE XXI.—By Dr. John B. Deaver, of Philadelphia, October, 1890. A female, twenty years of age, had extensive osteo-arthritis of the upper end of the femur and acetabulum. Excision of the head of the femur had been performed in 1889 by Dr. J. Ewing Mears. Numerous sinuses and extensive infiltration of soft parts were found. On November 30th the patient was "entirely well."

CASE XXII.—By Dr. John B. Deaver, 1893. A male had osteo-myelitis of the femur. He was greatly emaciated and depressed from long septic absorption. The amount of blood lost did not exceed two ounces. The fixation-pins were discarded and the circular constriction at the hip was held up by an assistant with strips of bandage. There was a good recovery.

CASE XXIII.—By Dr. J. Ewing Mears, of Philadelphia, 1892. The patient was a boy, ten years of age, with chronic osteo-arthritis of the hip and femur. Recovery.

CASE XXIV.—By Dr. Archibald E. Mallock, of Hamilton, Ontario, Can., 1892. The patient was a man, thirty years of age, with chronic osteo-arthritis of the hip, for which excision of the head of the femur had been performed December 16, 1891. Amputation was performed on March 12, 1892. It lasted thirty-five minutes, and several deep sinuses were exsected. Recovery followed.

CASE XXV.—By Dr. Charles B. Nancrede, of Ann Arbor, Mich., 1893. This was a case of tuberculous osteitis in a man thirty-one years of age. The femur was implicated as high as the trochanter and there was general infiltration of the soft parts. Operation was performed on May 1, 1893, and was followed by an uninterrupted recovery.

CASE XXVI.—By Dr. Charles B. Nancrede, 1892. The patient was a man, thirty-two years of age, with a history of injury to the left thigh several years before the operation. An osteo-sarcoma developed for ten months. The operation was performed in November, 1892. The disease involved the soft structures close to the joint-level. Hemorrhage was quite free after the tube was removed. Recovery followed.

CASE XXVII.—By Dr. Emory Lanphear, of Kansas City, Mo., 1890. The patient was a colored boy, nine years old, with osteo-myelitis of the shaft of the femur. Excision of the knee had been performed October 21, 1890. On October 24th the condition of the patient was so desperate that longer delay meant death, and amputation at the hip was performed. Scarcely an ounce of blood was lost. There was uninterrupted recovery.

CASE XXVIII.—By Dr. Emory Lanphear, 1892. A male, fifteen years old, had "osteo-myelitis of the entire shaft of the femur, with profound septicemia." The operation was completed in twenty-nine minutes. "Not more than two ounces of blood could have been lost, and this was from parenchymatous oozing." The patient died from septicemia.

CASE XXIX.—By Dr. Emory Lanphear, 1892. The patient was a woman, twenty-eight years old, with a history of severe neuralgic pain in the great toe, for which, in 1888, her physician had amputated this member. No relief followed, and Chopart's amputation was performed by another operator. Subsequently amputation was performed just above the ankle; again just below the knee; once more through the condyles of the femur; and still again at the middle of the thigh; finally, on August 28, 1892, Dr. Lanphear amputated at the hip. A sharp process of bone was found developed from the femur near the trochanter. This had penetrated the sciatic nerve and caused the severe pains. The patient recovered and was relieved.

CASE XXX.—By Dr. Emory Lanphear, 1893. A man, twenty-eight years of age, had osteo-myelitis of the shaft of the femur occurring after amputation at the junction of the lower and middle thirds. The operation was performed on February 24, 1893, and was followed by recovery without interruption.

CASE XXXI.—By Dr. Samuel H. Pinkerton, of Salt Lake City, Utah Ty., 1892. A boy, six years old, sustained a compound comminuted gunshot fracture of the femur. He died two hours after operation, from shock.

CASE XXXII.—By Dr. Samuel H. Pinkerton, 1892. A male, seventeen years old, had extensive tuberculous osteitis of the femur. The disease had been in progress many years. Recovery was slow, and was succeeded by subsequent curetting of the acetabulum.

CASE XXXIII.—By Dr. Samuel H. Pinkerton, 1892. A male, seventeen years of age, had tuberculous osteitis of the upper end of the femur, and acetabulum. There was recovery, the wound healing by granulation.

CASE XXXIV.—By Dr. Samuel H. Pinkerton, 1892. A boy, ten years old, had tuberculous osteitis of the femur. The operation was followed by recovery.

CASE XXXV.—By Dr. Samuel H. Pinkerton, 1892. A man, forty-three years old, had necrosis of the femur, and there had been spontaneous fracture. The patient died ten hours after the operation, from shock.

TABLE.

No.	Operator.	Date.	Age.	Sex.	Diagnosis.	Result.	Remarks.
1	John A. Wyeth,	Feb., 1890	39	Male	Osteo-sarcoma.	Recovered	At first operation femur was divided at level of lesser trochanter; sixteen days later head of the bone was enucleated.
2	John A. Wyeth,	Feb., 1890	34	Male	Neuro-sarcoma of internal popliteal nerve.	Recovered	The tumor of the nerve was extirpated Feb., 1888; recurred, and limb was amputated at lower third of thigh Oct. 1888; recurred again, and amputation at hip-joint was performed.
3	John A. Wyeth,	1892	17	Female	Osteo-sarcoma of lower end of femur; amputation and recurrence in stump.	Recovered	Amputation through lower third of femur was performed by Dr. Allen, of Cleveland, Feb. 5, 1892.
4	Wm. F. Fluhrer,	May, 1890	18	Female	Osteo-sarcoma of femur.	Recovered	Spontaneous fracture at middle of thigh April 26, 1890.
5	Charles McBurney,	May, 1890	34	Male	Osteo-sarcoma.	Recovered	
6	Frank Hartley,	March, 1892	26	Female	Osteo-sarcoma.	Recovered	
7	Merrill Ricketts,	Feb. 2, 1893	23	Female	Osteo-sarcoma.	Recovered	
8	C. A. White,	May 26, 1891	23	Male	Osteo-sarcoma.	Recovered	Patient was up and about after operation, but on twenty-seventh day was seized with pneumonia and died five days later.
9	A. M. Phelps,	1891	55	Male	Osteo-sarcoma.	Recovered	
10	W. W. Keen,	Jan., 1892	30	Female	Osteo-sarcoma.	Recovered	Patient was five months pregnant at date of operation.
11	M. J. Ahern,	1892	22	Male	Osteo-sarcoma.	Recovered	
12	J. B. Murdoch,	Feb., 1892	17	Male	Osteo-sarcoma.	Died	Death from shock twenty-two hours after operation.
13	Chas. B. Nancrede,	Nov., 1892	32	Male	Osteo-sarcoma.	Recovered	
14	J. McFadden Gaston,	Nov, 1890	?	Male	Osteo-sarcoma.	Died	Death on twenty-sixth day, from septicemia.
15	A. J. McCosh,	1892	27	Male	Osteo-sarcoma.	Recovered	
16	A. M. Phelps,	Dec., 1891	24	Male	Long-standing destructive osteo-arthritis.	Recovered	
17	A. M. Phelps,	1892	16	Male	Osteo-myelitis of entire femur.	Died	Death from exhaustion twelve hours after operation. Condition of this patient was so bad that operation was contra-advised, but was performed at urgent request of parents.
18	Emory Lanphear,	1890	9	Male	Osteo-myelitis of femur	Recovered	
19	Emory Lanphear,	1892	15	Male	Osteo-myelitis of femur	Recovered	
20	Emory Lanphear,	1893	28	Male	Osteo-myelitis of femur	Recovered	
21	Chas. B. Nancrede,	1893	31	Male	Osteo-myelitis of femur	Recovered	
22	Samuel H. Pinkerton,	1892	17	Male	Tuberculous osteitis of femur	Recovered	
23	Samuel H. Pinkerton,	1892	10	Male	Tuberculous osteitis of femur	Recovered	
24	Samuel H. Pinkerton,	1892	42	Male	Extensive necrosis of femur	Recovered	
25	Samuel H. Pinkerton,	1892	43	Male	Extensive necrosis of femur	Died	Death twelve hours after operation, from shock.
26	Samuel H. Pinkerton,	1892	17	Male	Osteitis of femur.	Recovered	
27	J. Ewing Mears,	1892	10	Male	Chronic osteo-arthritis of hip.	Recovered	
28	Archibald E. Mallock,	1892	30	Male	Chronic osteo-arthritis of hip.	Recovered	Operation lasted thirty-five minutes
29	John B. Deaver,	1890	20	Female	Chronic osteo-arthritis.	Recovered	
30	John B. Deaver,	1893	20	Male	Osteo-myelitis of femur.	Recovered	
31	R. L. Swan,	1892	19	Female	Chronic osteo-arthritis of hip.	Recovered	
32	G. A. Baxter,	1891	17	Male	Railroad pulpification of right foot, leg, and left lower extremity as high as middle of thigh.	Died	Patient rallied well; four hours later raised himself in bed to reach a glass of water and instantly expired.
33	W. B. Johnston,	1892	39	Male	Railroad pulpification of lower extremity, as high as middle of thigh.	Died	Death ninety hours after operation, from shock and exhaustion.
34	J. D. Thomas,	1891	18	Male	Femoral vessels divided in Scarpa's triangle by red-hot bar of iron; impending gangrene.	Died	Great hemorrhage from the accident. On seventh day after injury, amputation; death thirty-six hours later.
35	Samuel H. Pinkerton.	1892	6	Male	Compound, comminuted gunshot fracture of femur.	Died	Two hours after operation death from shock.
36	Emory Lanphear,	1892	28	Female	Osteoma of femur penetrating sciatic nerve.	Recovered	
37	H. O. Walker,	1892	14	Male	Osteo-sarcoma.	Recovered	
38	H. O. Walker,	1893	21	Male	Chronic hip-joint disease.	Recovered	
39	H. O. Walker,	1893	Young	man	Chronic hip-joint disease.	Died	Exhaustion in four hours.
40	F. W. Parham,	Oct. 5, 1893	3	Male	Osteo-sarcoma.	Recovered	

CASE XXXVI.—By Dr. Samuel H. Pinkerton, 1892. A man, forty-two years of age, had extensive necrosis of the femur. Recovery followed the operation. Healing took place by granulation.

CASE XXXVII.—By Dr. H. O. Walker, of Detroit, Mich., 1892. A boy, fourteen years old, had seven months previously been kicked by a horse. Osteo-sarcoma developed in the middle of the femur. Amputation performed on September 27, 1892, followed by recovery.

CASE XXXVIII.—By Dr. H. O. Walker, 1893. A man, twenty-one years of age, in whom six years previously hip-joint disease had developed. There had been exsection of the head of the femur on August 11, 1891. Amputation was performed in August, 1893. Recovery followed.

CASE XXXIX.—By Dr. H. O. Walker, March, 1893. The patient was a young man with chronic tuberculous osteo-arthritis of the hip. Operation was undertaken with but little hope of success as he was in a very low condition, the temperature ranging from 102° to 105° F. He died four days after operation.

CASE XL.—By Dr. F. W. Parham, of New Orleans. A boy, three years old, with osteo-sarcoma of the femur. The operation was performed on October 5, 1893. Recovery followed. "The method gave thorough satisfaction. Not over two ounces of blood were lost.

This limited number of cases—40 in all—gives a death-rate of 22.5 per cent. (Five were re-amputations.)

	Cases.	Deaths.	Per cent.
Sarcoma	17	2	11.76
Inflammatory bone-disease	18	3	16.6
Violence	4	4	100.0
Nerve-injury	1	0	——
For disease	36	5	13.88
For injury	4	4	100.0

Ashhurst's table of 633 cases gives a total mortality of 64.1 per cent.

	Cases.	Death-rate per cent.
For disease	276	40.2
For injury	309	82.4

Luning gives:

	Cases.	Death-rate per cent.
Gunshot wounds	239	98.0
Disease	153	42.0

Without discussing statistics, I claim it safe to conclude that by the method given bleeding after hip-joint amputation is as safely and as securely controlled as for an amputation of the thigh lower down. In no single case has it failed, and it has been employed now by operators of all grades of experience.

Prof. W. W. Keen, who employed this operation successfully at the Jefferson Hospital, Philadelphia, in January, 1892, for an enormous sarcoma of the thigh (the patient being five months pregnant at the time), in reviewing all the methods of controlling hemorrhage, said:[1] "It was reserved for an American surgeon to devise what is undoubtedly the best method and, in fact, what I think we can call now the only method of hemostasis in amputation at the hip-joint."

[1] THE MEDICAL NEWS, March 26, 1892.

Prof. J. B. Murdoch, of Pittsburg, who has four times performed hip-joint amputation, and once by my method, says:[1] "I believe this method to be the best and the one destined to supersede all other methods for the temporary arrest of hemorrhage."

Prof. W. F. Fluhrer[2] emphasized "that as little blood had been lost as in an ordinary amputation at the middle of the thigh."

Prof. McBurney[3] expressed the opinion that "no other appliance that had been suggested for the purpose could in any way compare in utility with that of Dr. Wyeth."

Prof. Emory Lanphear, of Kansas City, who has four times amputated at the hip by this method, says:[4] "This operation (Senn's)[5] is certainly better than any other yet devised save that which is known as the 'Wyeth bloodless method,' by which method failure to control hemorrhage seems to me to be impossible."

Prof. McFadden Gaston, of Atlanta, says:[6] "There was absolutely no trouble from hemorrhage . . . . and I feel satisfied that with this process all bleeding may be prevented in amputation at the hip-joint."

Dr. B. Merrill Ricketts, of Cincinnati, writes me that "the operation was entirely bloodless."

Dr. W. B. Johnston, of Ellicottville, New York, writes: "There was not one drop of arterial blood and only a slight venous oozing from the muscular tissue."

Prof. H. O. Walker: "We have in this a safe and reliable method for controlling hemorrhage which, in my judgment, is superior to any yet offered."

By personal communication Professors McCosh, Baxter, A. M. Phelps, Hartley, and Parham have expressed themselves that the method met every requirement in the prevention of loss of blood.

The question of *shock* is very important in this major operation. It is strongly brought out by Prof. Murdoch, who insists that "the greatest care must be exercised to maintain the vital forces by the moderate use of stimulants before the operation and the protection of the surface of the body from cold and exposure during its performance." To this

[1] Annals of Surgery, January, 1893.

[2] International Journal of Surgery, 1890.

[3] Ibid. [4] Kansas City Med. Journ., May, 1893.

[5] This method, devised by Prof. N. Senn, requires an incision eight inches in length, commencing three inches above the trochanter: the capsule, trochanter, and upper portion of shaft are exposed, the trochanteric muscular attachments severed, the digital fossa emptied, the capsule divided, and the head of the femur dislocated before any constriction for the control of hemorrhage is attempted. I do not think that this method will be received with favor by surgeons. The only instance in which it has been applied, to my knowledge, was by Dr. W. D. Foster, of Kansas City. "The patient was the subject of chronic coxitis, was much emaciated, and very weak. The operation was tedious, protracted, and bloody, and the patient survived between three and four hours." (Private communication.)

[6] Transactions Alabama State Medical Association, 1892.

should be added the minimum of anesthetic and the maximum of rapidity in technique consistent with thoroughness and the prevention of bleeding.

When ether is employed the Ormsby inhaler secures the safest narcosis with the smallest amount of ether.

NOTE.—Since the paper was read I have done a fourth amputation for tuberculous osteo-arthritis at the hip, without loss of blood and with recovery. The patient was a male, twenty-seven years old, and the disease had existed from childhood.

THE EFFECT OF CASTRATION ON WOMAN, AND OTHER PROBLEMS IN GYNECOLOGY.

BY WILLIAM GOODELL, M.D.,
HONORARY PROFESSOR OF GYNECOLOGY IN THE UNIVERSITY OF PENNSYLVANIA.

THERE are problems in gynecology not yet fully solved, on which I purpose in this paper to give my own individual opinion—an opinion that I do not claim to be infallible, but which is based upon a large experience.

One question not yet satisfactorily answered is this: What effect upon a woman has the removal of her ovaries? Unquestionably there usually follow the annoyances of the change of life. These, in my experience, are long spun out, because, when menstruation has been abruptly and artificially stopped, the change of life, especially in young women, takes more time to become fully established than when the menopause has been naturally induced. Consequently, years may elapse before the victim of the operation escapes from the perspirations, the flashes of heat, the skin-tinglings, the numbness of the extremities, the nerve-storms, and all other vaso-motor disturbances, the name of which is legion. My experience, therefore, coincides with that of Hegar, who says that "the artificial menopause induced by the operation is often attended with more serious complications than those which are not rarely observed in the natural change of life."[1]

Then again the unwelcome fact cannot be shirked that mental disturbances may be traced directly to the removal of the ovaries as a cause. These are manifested by brooding, by low spirits, by melancholy and even by insanity. Every ovariotomist has met with such painful episodes in his practice. Glavaecke, who has made a study of this subject, goes so far as to declare that "in almost all cases the mind becomes more or less affected, and not infrequently melancholia results."[2] Keith has stated that ten per cent. of his patients who recover from hysterectomy subsequently suffer from melancholia or from other forms of mental disease.[3] Yet this result must come, not so much from the extirpation of the womb, which is merely a muscular bag, as from the associated ablation of the ovaries, of which the womb, physiologically, is only the appendage.

Whether this deplorable event is due directly to the nerve-shock of the operation itself, together with its emotional environment; whether to the abrupt arrest of an habitual flow; or whether to the absolute need of the ovaries for mental equilibration—is yet an open question. We know, however, that sexuality is a potent factor in woman as well as in man, and that even certain sexual functions—such as coition, menstruation, gestation, parturition, and lactation—of themselves tend not infrequently to disturb the mental poise. I am disposed, however, in a measure to attribute the attacks of insanity in those women who have lost their ovaries to their brooding over the thought that they are unsexed; and if brooding may be deemed in itself a mental aberration, Glavaecke's sweeping statement is not an extravagant one.

But, after all, the burning question is: Does the removal of the uterine appendages affect the sexual sense of the woman, or in any way unsex her? Here we have an embarassing diversity of opinion. Some operators contend that in these respects castration does not affect her at all; others that it does so, and often very decidedly. The truth in such cases usually lies in the mean, as I shall try to show.

In my *Lessons in Gynecology* and in my early teachings I maintained that the removal after puberty of the ovaries and the tubes does not unsex the woman—at least not to a greater extent than castration after puberty unsexes the man. In the one the ability to inseminate is lost; in the other the capability of being inseminated; but in both the sexual feelings remain pretty much the same. Males who have lost their testes after the age of puberty are said to retain the power of erection, and even of ejaculation, the fluid being of course merely a lubricating one. The amorous proclivities of the ox or of the steer are the scandal of our highways. Alive to these facts, Oriental jealousy demands in a eunuch the complete ablation of the genital organs. Not only are the testes, therefore, removed, but also the scrotum and the penis flush with the pubes. Hence, to avoid the soiling of his clothes, every eunuch carries in his pocket a short silver tube, which he inserts merely in the pubic meatus whenever he passes his water. I contended, further, that, apart from cessation of menstruation and from inevitable sterility, the woman after castration remains unchanged, having the same natural instincts and affections; that the sexual organs continue excitable, and that she is just as womanly and as womanish as ever. I held that the seat of sexuality in woman had long been sought for, but

[1] British Medical Journal, December, 1886, p. 1280.
[2] N. Y. Medical Journal, July 20, p. 73. [3] Ibid., p. 73.

in vain. The clitoris had been amputated, the nymphæ had been excised, and the ovaries and tubes extirpated; yet the sexual desire had survived these mutilations. The seat had not been found, because sexuality is not a member or an organ, but a sense—a sense dependent on the sexual apparatus, not for its being, but merely for its fruition. My inference was that the physical and psychic influence of the ovaries upon woman had been greatly overrated. In the popular mind a woman without ovaries is not a woman. Even Virchow contends that "on these two organs (the ovaries) depend all the specific properties of her body and her mind, all her nutrition and her nervous sensibility, the delicacy and roundness of her figure, and, in fact, all other womanly characteristics." This statement I held to be true only in so far as the ovaries are needful for the primary or rudimental development of woman, but not true when once she is developed; for then they are not essential to her perpetuation as woman.

In time, however, I slowly found out that the removal of the ovaries does blunt and often does extinguish ultimately the sexual feeling in woman; although the removal of the testes after puberty is said not to impair the virile sense of the male. This random opinion, however, I very much doubt, despite the maudlin sentiment expressed even about eunuchs by De Amicis and by other travellers in the Orient. For the secretion of the seminal fluid is in itself the great aphrodisiac, and how otherwise can we explain the changed behavior of Abelard toward Heloïse after his forcible castration? Giving up this analogy, therefore, in my more recent teachings I adopted that of the menopause as suggested by Kœberlé. I accepted his analogy, although I could not wholly accept his inference that woman is not affected sexually by the natural cessation of her menses. Kœberlé sums up his opinion in the following words: "In my own experience the extirpation of both ovaries causes no marked change in the general condition of those who have been operated on. They are women who may be considered as having abruptly reached the climacteric. Their instincts and affections remain the same, their sexual organs continue excitable, and their breasts do not wither up." [1]

A riper experience, of which time was the main element, has led me still further to modify my views on this subject. Unquestionably the natural change of life when fully established, but not until it is fully established, does very sensibly dull and deaden the sexual sense of woman, which ultimately disappears in her long before virility is effaced in man. Nor is the survival of this sense after the menopause so essential to woman, because after the cessation of menstruation she loses the power of procreation, which is retained to an advanced age by man. This is a wise provision of Nature, for, did the sexual sense of the wife outlast that of the husband it could not be gratified. Sensible of these changes, a gifted French authoress makes one of her heroines say, with italicized emphasis: "*Men* may forget the course of years; they may love and become parents at a more advanced period than we can, for Nature prescribes a term after which there seems to be something monstrous and impious in the idea of (our) seeking to awaken love. . . . . Yes; age closes our mission *as women* and deprives us of our sex." Now what happens in the natural menopause holds good in that artificially and abruptly produced, with this important difference, that in the latter the sexual feeling is sooner lost. I am willing to concede that in some women, by no means in all, whose health had been so crippled by diseased appendages as to extinguish all sexual feelings, there is, after castration, a partial recovery of the lost sense whenever health has been regained. Yet even in these cases, as far as I can ascertain—for women are loath to talk about these matters—the flame merely flares up, flickers, and soon goes out.

My own experience would lead me to the conclusion that in the majority of women who have been castrated the sexual impulse soon abates in intensity, much sooner than after a natural menopause, and that in many cases it wholly disappears. This tallies with Glavaecke's conclusion that "in most of the cases the sexual desire is notably diminished and in many cases is extinguished." In corroboration of this statement let me cite, out of my many cases in point, a few of the more salient ones. The wife, aged thirty-four, of a farmer, so exhausted him by her sexual exactions that his health suffered very seriously. The appendages were diseased and fixed by adhesions. After their removal menstruation and the sexual impulse continued unabated for a little over a year, when the former wholly ceased, and the latter not long after disappeared. Another case was the very ardent wife, aged thirty, of a man who was not so well-mated to her. She was sterile and had excessive menorrhagia from a uterine fibroid, for which her ovaries were removed. Menstruation did not reappear, and in less than two years all sexual feeling was lost. In a third case, a young lady of high intelligence was reduced to a pitiable condition of ill-health by menorrhagia and by frequent acts of self-abuse. She was not insane, yet, incredible as it may seem, she sometimes masturbated no fewer than eight times in the four and twenty hours. For several months after the removal of the ovaries, which were apparently healthy in every respect, she kept up her bad habits, although

[1] Nouveau Dictionnaire de Médecine et de Chirurgie, tome xxv, p. 487.

the monthly flow never returned. Then the sexual feeling gradually vanished, and she gave up her solitary vice. In a fourth case I removed the healthy ovaries of an unmarried lady of middle age who was queer, but not insane enough to be confined. Toward her monthly periods she was goaded by so irresistible a desire for sexual intercourse that she herself feared her going astray. Not long after her castration, which was done more to save her from reproach than to cure her insanity, she lost the desire wholly and absolutely. She did not, however, regain her reason, and ultimately had to be placed in an insane asylum.

Imlach's case is a celebrated one in medico-legal jurisprudence. This skilful surgeon, after removing the appendages of a woman, was prosecuted by her for unsexing her, and by her husband for spoiling thereby his marital pleasures. The special committee appointed to investigate Imlach's numerous cases of castration at the Woman's Hospital, in Liverpool, reported that they found "a distinct loss of sexual feeling to such an extent as to cause serious domestic unhappiness in not a few instances." The correctness of this report is corroborated from cases in my own practice, of engagements broken off, of conjugal estrangements, and of marital infidelity.

Let me here remark that I was once consulted by the late Dr. Kerlin about the propriety of removing the ovaries from a feeble-minded inmate of his institution, whose shameless intercourse with the other sex was the only bar to her being at large. Being very sanguine that the operation would succeed in its object I urged its performance. He, however, could not get the official sanction which we both wished for our own legal protection, and nothing further was done than to keep the girl under lock and key.

In other sexual characteristics I have not found in these women any marked changes, either physical or psychic. Their affections seem to remain the same; their breasts do not flatten or wither up; they do not become obese; abnormal growths of hair do not appear on the face or on the body, and the tone of their voice and its quality are not changed. In one word, there has not been in a single one of my cases a tendency toward any characteristic of the male type. If any change has taken place, it has been in the direction of old-maidhood.

In close relation with this subject four questions come to the fore, and grave ones they are:

a. Do chronic diseases of the appendages often lead to a fatal issue?

b. To restore health to the woman suffering from such diseases of the appendages, is it needful invariably to invoke the aid of surgery?

c. After an abdominal section has been made, and after adhesions have been broken, must the now free appendages always be removed?

d. Is castration of the female a warrantable operation for the cure of insanity or of epilepsy?

To the first question I answer that the death-rate from chronic diseases of the appendages is greatly overrated, so much so that, in my opinion, more deaths result from the operation of removing the tubes and ovaries, in the hands of even the most successful gynecologist, than from the disease itself. Knowsley Thornton states that "in his own experience pyosalpinx is not necessarily a fatal disease." In my experience, after the patient has safely passed through the acute stage of the inflammatory attack, her life is in very little danger. Chronic diseases of the appendages usually affect the well-being of the woman, but they ordinarily do not threaten her life in any other way than by the wear and tear of prolonged discomfort. This may shorten her days, but fatal attacks of peritonitis, even in so-called leaky pus tubes—if such ever exist—are the exception. Paradoxic as it may seem, the life of a woman with but one ailing appendage is in greater danger than the life of a woman with both of her appendages diseased. The explanation is a simple one: Parturition very generally relights a chronic inflammation of the pelvic organs, but when both appendages are diseased pregnancy rarely takes place.

To cure the ill-health of a woman whose appendages are diseased, or to relieve her from her sufferings, a surgical operation is by no means always necessary. Many women with adherent tubes and ovaries, and, for the matter of that, some even with pus in these organs, suffer either no inconvenience whatever, or very little indeed from that condition *per se*. There are, again, others who have pains or aches only at their monthly periods. But let their health break down, say from influenza, from malaria, from overwork, or from nerve-strain, then symptoms may arise from hitherto latent pelvic lesions. Yet, in most of these cases, if the woman can be restored to her former condition of health—that is to say, to that which she enjoyed just before the final breakdown—she will lose her local symptoms and become symptomatically well. On this matter I can speak positively, for many a patient has been sent to my private hospital in order to have her distinctly diseased tubes and ovaries removed, who has been restored to health without the use of the knife. Now, by the term "*restored to health*," I do not mean that the treatment has released the adherent appendages, but that it has freed the woman from every pain and restored her fully to all her social and domestic duties and pleasures. She has been cured so well as to be able to row, to swim, to dance, to take long walks, to ride on horseback

and to exercise in the gymnasium—and what better vouchers of good health than these can be given?

I will go yet further and assert that even cases with all the subjective and all the objective symptoms of ovarian or of tubal abscess have been cured by me without any operation whatever—the pus having disappeared either through absorption or through inspissation. What is still more strange, in a few cases of abscess of each uterine appendage—very few, I will acknowledge—the treatment by massage, electricity, local applications, and by a general building up of the system was followed by conception, pregnancy, and parturition. These were cases in which I did not advocate castration until other means had been tried first, but all had been sent to me by their physicians for the purpose of having their ovaries removed.

I come now to two cases on which I urged castration. Perhaps I have had more, but I cannot recall them. Each one had the fixed, sausage-like, tubal tumor on either side. Yet each patient, to my very great surprise, conceived and bore children. The one, a patient of my friend Dr. D. Murray Cheston, first consulted me and afterward a gynecologist of world-wide renown, who corroborated my diagnosis of double pus-tubes, and doomed her, as I had, to hopeless sterility. The puerperal convalescence was stormy and at one time threatening; but she ultimately got well. The other case is a standing joke of my friend Professor Parvin, who knew the circumstances. The woman presented similar characteristics to those of the preceding case, and I urged an operation. This she luckily refused to undergo, and a year or more afterward gave birth to twins. Of course, the rejoinder will be made, that my diagnosis, although shared by other specialists besides myself, was a faulty one. But I can as unhesitatingly reply that had the objector made the examination he inevitably would have followed it by an abdominal section, and as inevitably would have removed both appendages, as I certainly should have done had I opened the abdomen.

Now, in these cases, the pus was either confined to the ovaries, or, as I supposed from the sausage-like form of the tumors, it lay sealed up in the tubes, and the closed-up lumen of one of them was, by returning health, restored to full patency. The possibility of a closed-up tube regaining its bore is I know strongly disputed, even ridiculed, and *a priori* reasoning would certainly justify the doubt. If, however, solid uterine fibroids of stony hardness and of several pounds weight will through absorption wholly disappear, as every gynecologist has seen them disappear, why may not the tubal barriers and septa also break down and become absorbed. I have read somewhere, but the reference I cannot now find, that, in order to prevent conception in a case of narrow pelvis, both tubes were ligated, without establishing sterility. On the other hand, great disorganization of the ovaries is not incompatible with pregnancy, for it appears that a very small amount of ovarian stroma goes a great way. Menstruation often continues, however diseased the ovaries may be, and Atlee reports two cases in which one ovary having been removed, the other became so cystic as to need *repeated tappings*. Yet each woman not only menstruated, but conceived and gave birth to a child.[1] In one of these cases, a cyst of the sole ovary, the other having been removed many years previously, was tapped twice before conception, twice before delivery, seven times afterwards and then was extirpated. Robertson[2] mentions a remarkable case in point, which occurred in his practice. He removed both the ovaries, which were diseased, of one of his patients, yet she afterward conceived and gave birth to a child. His explanation is that he must have left, unwittingly, a scrap of healthy ovarian tissue in one of the stumps. But on the other hand, the ovum could not have descended into the womb, unless the lumen of one tube had reopened at the point where it had been sealed up by the adhesive inflammation set up by the ligature.

With regard to the third problem: Supposing simply therapeutic measures fail, and the physician is driven to surgical interference, must he, after breaking up the adhesions, always extirpate the now free uterine appendages? Most surgeons contend not only that the diseased appendage should be removed, but also that both appendages should be extirpated, even if one alone is diseased. This advice is given on the ground that the healthy one is liable in its turn to become affected. My own course, under such circumstances, would be never to remove the healthy appendage unless the menopause had been established already, or unless there obtained a good reason for hastening it on. On the other hand, should both ovaries be intrinsically diseased and their tubes contain pus, I would always remove both uterine appendages in their totality, no matter what the age of the patient might be. Generally, however, the pus is limited to the tubes, and in that case sometimes one ovary, barring its adhesions, which, of course, must be broken, is healthy enough to be left behind. In such a case the tube alone, if possible, should be removed, and not the healthy ovary or the healthy ovaries—if both happen to be sound. Further, rather than wholly remove all ovarian stroma, I should try in such cases to leave behind even a small fragment; for, in several of my cases in which a piece of an ovary, not larger than a bean, was left behind, not

[1] Atlee: Ovarian Tumors, pp. 38 and 39.

[2] British Medical Journal, September 27, 1890, p. 722.

any menstrual or sexual changes whatever took place in the woman. Should the uterine appendages be merely adherent, and not intrinsically diseased to any extent, I would as a rule, during active menstrual life, release them, and perhaps extirpate the worse of the two, but not both of them.

My reasons for this conservative treatment are, that the complete extirpation of these organs, as I have shown before, tends to destroy the sexual feeling, to disturb the mental equilibrium, and to produce prolonged nervous perturbations, all of which come from the abrupt and untimely suspension of menstruation. There is yet another very excellent reason for this advice: The majority of physicians, and all laymen, look upon women deprived of their ovaries as unsexed. Just as castration is in the male, so the analogous operation is in the female deemed a sexual mutilation to which common consent attaches a stigma. No woman would marry a eunuch, and few men would wed a woman deprived of her ovaries. In my own practice I have known of several very sad cases of marriage engagements broken off, of marital infidelities, and of bitter estrangement between husband and wife, all of which would have been avoided had one ovary been spared, or, indeed, had a mere fragment of one been left behind.

Upon the question of the removal of the uterine appendages for the cure of insanity and of epilepsy, I have very few words to say, but they are all based upon cases occurring in my own practice. If the insanity is limited to periodic outbreaks, strictly ovarian in their character and with the menstrual flux as a storm-center; if the epileptic fits are preceded by an ovarian aura—that is to say, if they pivot around the monthly period and appear at no other time—the removal of the appendages, by suppressing a pernicious menstruation, usually will bring about a cure in either disease. But when these organs are extirpated merely as a panacea *per se* for these mental and neural disorders, irrespective of an ovarian origin, the operation affords no relief. At the same time I am free to confess that, in order to stamp out insanity, I am strongly inclined to advocate the legal castration of every man and of every woman who is the unfortunate victim of this hereditary curse.

CLINICAL LESSONS.

Three Cases of Remarkable Spinal Anterior Curvature with Mental Aberration.

BY S. WEIR MITCHELL, M.D.,
PHYSICIAN TO THE ORTHOPEDIC HOSPITAL AND DISPENSARY FOR NERVOUS DISEASES, PHILADELPHIA.

I SHOW you to-day two out of three cases of somewhat unusual character. The third member of the group I have not here. You cannot fail to observe at once the attitude of this girl. Let me ask your attention to this singular case. The curvature came and grew complete within a few months. It is still remarkable, and was far more so. The whole spine was bent, the belly protruded, and the head carried back, to enable her to see objects on a line with the eyes. There was no possibility of straightening her either by passive efforts or through volition, but these attempts gave rise to no pain. The spine seemed to be rigid, and she could neither make it erect nor fully bend to one side; the head also possessed small power of rotation or flexion, while the neck muscles were not rigid. With gain in her mental state, these peculiar symptoms have become notably less.

This description applies nearly throughout to the man, except that his spinal difficulty was altogether above the lumbar region. The girl's case is, no doubt, largely hysterical, and so also is that of the boy who had in an extreme degree the spinal peculiarity.

The man's condition hardly justifies the label hysteria; nor did that of two others alluded to later.

Here, then, are three people, a boy, a girl, and a man, all more or less insane, and all showing a disorder of the vertebral column, which comes with the mental state, and lessens as this gets better, and is not due to appreciable organic disease.

How very strange are the postures is shown in Dr. Taylor's clever sketches. In a large experience of all forms of mental disorder I have never seen elsewhere anything just like these in the pronounced character of the curves and in the immobility which they manifested.

The boy's case is less distinct, but the resemblance to the others suffices to justify the grouping. Perhaps this collection of symptoms may be accidental. The chance grouping together of symptoms in a trio of cases may readily deceive one into the belief that we have before us an undescribed clinical type. I have been patiently reticent, and have long withheld these three cases from publication, in the hope of seeing others like them, which might permit of a larger numerical comparison. My patience has not been rewarded with success, and I am now tempted to call attention to a peculiar set of symptoms, with the hope that others may contribute like cases to my meager list, so that a larger experience may become possible. I incline to the belief that the cases I here exhibit illustrate a novel clinical group, which may be non-hysterical or may assume the hysterical type.

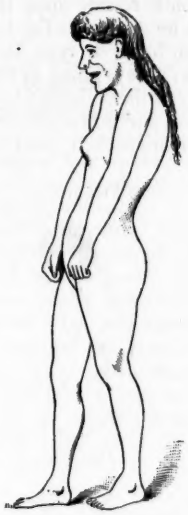
I ought to say, also, that in the past I have met with at least three patients who had this collection of symptoms, but of these I have no notes, as they were seen long years ago, and only in consultation.

The question is now in this form: Is there a clinical type, hysterical or not, characterized by

mental failure, physical weakness, retinal changes (?), and rapidly evolved spinal curvature, extreme in degree and otherwise unusual in type, not due to organic vertebral disease?

CASE I.—F. B., female, thirteen years of age, was brought to Dr. Mitchell's clinic, April 4, 1890.

FIG. 1.



The family history is negative. The child was born at term. The labor was easy, and instruments were not used. She was breast-fed. She began to walk at thirteen months, and to talk at about the same time. She has never had any serious illness, except pneumonia, seven years ago. She developed well, mentally and physically, until about eleven months ago, when her mother noticed that she would have fits of causeless crying and great depression. At times she would convulsively break out in attacks of violent anger. While previously she had always been number one in her school, she soon lost all interest in study, fell to the foot of the class, and finally refused to go to school at all. She sits all day, careless and unconcerned as to what is going on around her. She will have nothing to do with her old school-friends, shows no affection for her parents or brothers and sisters, and never speaks except in answer to a question, save that sometimes she talks to herself, and, as if under the influence of an hallucination, will cry out, "What do you want?" "Get out of here," etc. She has largely lost the sense of personal cleanliness, and is dirty in her habits.

Her general bearing is striking. The abdomen is thrown forward, the shoulders back, the right one being much higher than the left, while the head is thrown forward, the chin at times resting upon the chest. The left thumb is strongly flexed, the forearm pronated, and the arm rotated inwardly. The entire spine bends stiffly, and it appears impossible for her to stand erect. There is no evidence of spinal bone disease, no angular curvature, no pain on pressure, no sensitiveness to heat or to cold. While there is quite a little general muscular weakness, there is no true palsy, and except for slight pallor, she is well nourished. There are occasional slow lateral movements of the head, and the hands are slowly passed over each other. Whether these movements are purposive or automatic cannot be determined. The fingers of both hands can be passively hyperextended.

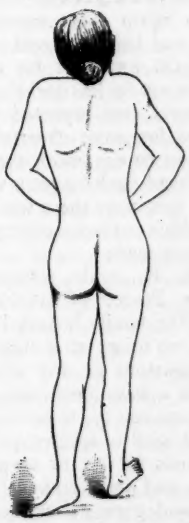
Her expression is fatuous and idiotic. She seems to take no notice of her surroundings, and is absolutely without interest in anything. Her replies to questions are silly, her speech slow and somewhat thick.

She sleeps well now, but formerly badly, and seemed to fear the dark. Menstruation has never appeared, though she is quite well developed. Her appetite is fair. The urine is normal. The knee-jerk is slightly large, but not spastic. Sensation is normal.

Dr. de Schweinitz examined her eyes, and reports: "Concomitant convergent squint. No swelling of disc, but there is a diffuse retinal haze, especially marked above and below the discs. Both eyes are hypermetropic."

The patient was seen again in February, 1893. Her mental condition was even worse than before. She never spoke except in a silly fashion, and had to be attended to like an infant. She still has outbursts of anger. Physically she was in about the same condition as already described, except that the protrusion of the abdomen and the large anterior curvature of the lumbar and lower dorsal spine were less marked.

FIG. 2.



September, 1893. She has steadily but slowly improved since the last date, with lessening curvature, but the gain in the physical aspects of the case far outstrip the gain in the mental condition. The eye-grounds are better.

CASE II.—L. W., male, twenty-five years old, married, a mill-hand, came to the clinic November 22, 1889.

The family history is negative. The patient denies venereal disease, and no evidence of it is discoverable. He has never used liquor at all and tobacco only moderately. He has always been well until June, 1888, when his employer discharged him on the ground of mental unfitness for work. He himself complained and complains of backache and headache. He says that he often hears voices of invisible people talking to him, but he cannot remember what they say. He denies that he ever gets despondent, and is totally unconscious of any mental trouble.

His general bearing is similar to that of the first case described, but not so marked. The eyes are held half closed. The gait is shuffling and slow, and the right foot is much everted. Station is good. The knee-jerk is large, but not spastic. Sensation is normal. There is no paralysis.

His expression is dull and sleepy. Mentally he is stupid. He understands what is said to him, and replies intelligently, but often his statements cannot be relied on. He will unwittingly falsify. He has lost all interest. His inability to work is evidently due to mental insufficiency and not to the pain of which he complains. He is harmless and never subject to fits of anger, and on the other hand he is without affection. In other words, he is in a condition of dementia.

The abdominal and thoracic organs are normal. The eyes were examined by Dr. de Schweinitz, who reports that there is a slight retinitis.

He was seen again some months later, in the spring of 1890, and had improved sufficiently to do odd jobs, but still was unfit for continued work. The spinal curve was far less and the mobility nearly normal. The eyes were reported to be materially better. He was far more cheerful, and observed with interest that he was more erect and did not have to tilt his head back to get a view of the faces of people. At this time there was a complete re-examination, which added nothing to the simple statements already made.

CASE III.—L. R., male, sixteen years of age, was sent by Dr. Pearce, of Steubenville, Ohio, in March, 1890. The family history is negative. The patient suffered no injury at or near birth. He has never had convulsions or any other serious acute illness. He has always been very retiring, seldom speaking unless spoken to, never mirthful, averse to society, and not fond of amusement. He attended the public schools for six or seven years, but was always careless and indifferent about his studies, and as time passed grew duller and duller. About two years ago his comrades annoyed him so much that he was taken from school, and for a while he was taught at home. Finally, however, all efforts at education had to be abandoned. He still possesses intelligence enough to read, but rarely does so. He understands perfectly all that is said to him, but is morose and irritable. He cries a great deal and is without affection. He is extremely disobedient and without fear of punishment. He protests that there is nothing the matter with him, says dramatically that he will live a thousand years, and that he wants to be left alone. He often gets upon his hands and knees on the floor, and turning his head in an objectless manner toward the ceiling remains so for a considerable time. His usual position is sitting with the thighs strongly flexed on the abdomen, the legs flexed on the thighs, the arms clasped around the legs, and the head down, with the chin resting upon the knees. This knotted position he maintains for hours. At times he suddenly rises, hops, or runs around the room, whining the while, always going to the left if he meets a table or chair or other obstruction. He will stop suddenly, jump up and down many times, frowning and looking horror-stricken, and then walk away

FIG. 3.

and sit down in his accustomed attitude. He objects much to being touched, saying that it hurts him, but deep pressure does not give as severe pain as a light touch. His hyperesthesia is mental, not peripheral. He is reluctant to talk to anyone or even to answer a question, and when he does so he repeats words, a clause, or even a sentence several times, so that frequently it is difficult to comprehend what he says. He is, however, sometimes boisterous, and will swear roundly and scold everyone around him, and squirm and jump and throw himself about, and finally fall to the ground exhausted, panting for breath, grasping at his chest as if in deadly fear of suffocation. He complains bitterly of new clothing, saying that it is too tight and binds him. He has great trouble in dressing and undressing, but objects strongly to being assisted. He will apparently forget what he is doing; will put on a shirt and not remember that a coat should follow. The same peculiarity is shown in eating. It is no unusual thing for him to sit at table for hours muttering to himself, and only now and then taking a mouthful of food. So bad is this at times that he sometimes suffers from want of

nourishment. He goes to stool of his own accord, but may be found there hours afterward. The character of his sleep varies much; sometimes it is quiet and restful, at others much broken.

The illustration shows well the peculiarities of his usual position when standing. The legs are slightly flexed at the knees, the abdomen thrown forward, and the shoulders rounded. There is an increase in the normal antero-posterior spinal curvatures and slight left lateral curvature. There is no evidence of bone-disease. There are also apparent slight curvatures of the legs at the knees. They can be overcome by passive, but not by active motion, and the spine can by no means be straightened. The skin is yellowish and harsh. The knee-jerk is lessened, but distinctly reinforcible. The thoracic and abdominal organs are normal. Careful watching has failed to detect evidence of masturbation. The eyes appear to be normal.

When last heard from, three years later, he had improved considerably, the change coming on rather suddenly in March of this year. He said one day that he had been out of school so long that he would be behind the boys, and asked for his books. A teacher was obtained for him, and he became obedient and cheerful and desirous to study. The gain has been happily continuous, and, as in the other cases, the change in carriage and the lessening of spinal immobility has gone on as the mental state has become clearer.

ORIGINAL LECTURE.

CYSTITIS.[1]

BY CHARLES G STOCKTON, M.D.,
OF BUFFALO, N. Y.;
PROFESSOR OF THE PRACTICE OF MEDICINE, BUFFALO UNIVERSITY.

THE urine of this woman is characteristic of a mild cystitis. She entered the hospital about a month ago suffering with facial erysipelas, for which she received the ordinary treatment, making a good recovery. Directly after the passage of a catheter, however, she began to suffer from irritability of the bladder. She had a frequent, almost continuous desire to urinate, with a sense of burning and vesical tenesmus. The examination of the urine at that time verified the diagnosis of cystitis, which the symptoms suggested. The patient left the hospital, but has been compelled to return. She has been about the house, not confined to bed, passing urine every fifteen minutes or half-hour. The urine contained epithelium from the bladder, pus-corpuscles, some free red blood-corpuscles, and mucus. In a well-marked case of cystitis the urine contains such a large amount of mucus that it will cling to the bottom of the vessel when the urine is decanted. The color depends largely on the degree and nature of the inflammation. If it is a mild catarrh, the mucus is whitish. If there is extensive and severe catarrh, it is grayish or perhaps tinged with red. If the urine decomposes in the bladder, there is the well-known ammoniacal odor. It is often the case that the irritation that gives rise indirectly to ammoniacal decomposition of the urine is a highly acid state of the urine, which contains crystals of oxalate of lime and of uric acid, until the cystitis assumes the septic form.

The question naturally arises: What is the cause of the cystitis in this girl? Was it the passage of the catheter? Experiments on animals seem to show that the introduction of microörganisms into the bladder is not sufficient in itself to set up cystitis. If, however, the bladder has been over-distended so as to produce a certain degree of paralysis of the muscular wall and an injury of the mucous membrane, then the microörganisms will find a proper seat for development, and cystitis will result. When cystitis follows the passage of the catheter, you may accuse yourself of carelessness in having introduced septic germs with the catheter, but you must also look for the predisposing cause that rendered the bladder susceptible. One of the most common predisposing causes of cystitis is the distention of the bladder from urine too long retained. If a person has not passed water for six or eight hours or longer, the ultimate cause of the retention should be inquired into. Palpation and percussion should be practised, to determine the size of the bladder, and the patient's sensations should be taken into consideration. In this patient's case there was undoubtedly a retention of urine that called for the use of the catheter and that rendered the bladder liable to cystitis; but the question arises: Was the catheter septic, or did the bacteria enter the bladder at a later time, and after the cystitis was well established? Probably the catheter was not septic—at any rate it was undoubtedly fairly clean. Even an aseptic catheter may set up cystitis in a bladder that has previously been over-distended, though manifestly a dirty instrument is much more likely to cause trouble.

The urine, you notice, is smoky, an appearance characteristic of cystitis, with the presence of blood. There is also a cloudiness of the urine, which would undoubtedly precipitate if the urine were allowed to stand for some hours, and under the microscope would be shown to consist of pus, epithelium, and mucus. I have alluded to the ammoniacal reaction of the urine in cystitis. The urine is not ammoniacal when secreted, but, on account of the presence of bacteria in the bladder, a decomposition of urea occurs, forming ammonium carbonate. I have already said that one of the commonest predisposing causes of cystitis is a highly acid and irritating urine. After ammoniacal decomposition has taken place the reaction is changed, but the urine is equally irritating, and the indication is to keep it at the neutral point. This cannot be determined by examining the urine at a daily visit; the urine must be tested with litmus paper every time it is voided, and the medication should be governed accordingly.

We must remember a sign that is especially liable to be seen in old people. This is the gradual trickling away of urine; this indicates not that the urine is passed as it is secreted, but that the bladder is over-distended, the enlarged prostate acting as a dam over which the urine runs slowly.

In the treatment of cystitis not only must the urine be kept neutral, but it must also be kept diluted, and hence bland. Large amounts of absolutely pure water, distilled, or rain-water, must be used. Mucilaginous drinks

[1] A clinical lecture delivered at the Buffalo General Hospital.

also have some curious influence to make the urine bland. The mucilage itself, of course, does not pass out with the urine, but probably some constituent of the mucilage does. Balsamic preparations also render the urine bland. The oil of sandalwood is perhaps as useful as any. It may be given in capsule, gtt. v–x, every four hours, until the urine is moderately impregnated. Improvement likewise follows the use of less balsamic diuretics, such as buchu and uva ursi. Fluid extract of buchu, fifteen minims (one cubic centimeter), every two or three hours during the day and perhaps once during the night, acts as well as any of this class.

The remaining treatment of cystitis is local; this means washing out the bladder. A clean catheter is used; the urine is first drawn off, then the bladder is washed with distilled water so as to remove shreds of epithelium and mucus. Following this, astringents, stimulants, or sedatives may be used according to the indications of the case. I was an interne in this hospital when the local treatment of cystitis was first talked about in this country. I well remember seeing patients lie here month after month without any attempt at local treatment, and I remember one boy whose bladder I had to wash out every day, and I looked upon this treatment as a hardship and as quite heroic. This patient had a gonorrheal cystitis, and he became worse under treatment as the bladder was washed out with a strong astringent solution. At the time I condemned the method of treatment, but now I have no doubt that, if milder solutions or even distilled water had been used, the patient would have recovered under this treatment. He improved somewhat after the washing out of the bladder was discontinued, but he did not entirely recover.

One of the best preparations to use in washing out the bladder is boric acid, making a saturated solution in cold water, then heating the water to about the temperature of the blood and introducing it gradually. If the solution is allowed to run in quickly, it will induce a spasm of the bladder. The next day after this treatment a solution of hydrogen dioxid (25 per cent. of the fifteen-volume solution) may be used. The balsams may be suspended in water by the aid of magnesia and introduced after filtration. I do not know exactly how to state the strength of the solution. I usually prepare it by rubbing up a dram of oil of sandalwood with magnesia, putting this on a filter-paper, and passing through it a pint of distilled water. Just how much of the sandalwood remains in solution I do not know.

There is one other important point in the treatment of cystitis—rest in bed. This girl was walking about the ward when I took charge of her, and passing water every half-hour. She now rests in bed and passes water every two or three hours. The diet should be perfectly bland. Milk is often the best food, but it sometimes causes fermentation in the stomach and upsets the system. Vegetable and starchy foods are usually admissible, but little or no meat should be given. Coffee and tea, as well as all condiments, spices, and salt, should be excluded. One often goes astray in thinking that milk-diet should always be used in such cases.

The Northwestern Ohio Medical Association will hold its forty-seventh semi-annual meeting at Toledo, Ohio, December 14 and 15, 1893.

CLINICAL MEMORANDA.

A CASE OF HYPEREMESIS GRAVIDARUM TERMINATING IN RECOVERY AFTER AN INDUCED ABORTION OF TWINS.[1]

BY CLARA T. DERCUM, M.D.,
OF PHILADELPHIA.

VARIOUS and many are the theories that have been proposed in regard to the etiology of hyperemesis gravidarum, but as a matter of convenience they may be divided into two classes. The first is that in which there are local lesions present, such as displacements and flexions of the uterus, erosions, lacerations, and various structural degenerations of the cervix uteri. Among this class the various lesions of the gastro-intestinal tract must also be included. The other class comprises those cases in which no visible or symptomatic local lesions exist. The simple uncomplicated cases that occur in women of a neurotic type are considered as neuroses. In the first class of cases treatment should be directed to the local lesions present, and their cure generally results in an amelioration, if not an entire cessation of this affection. In the second class, however, treatment, to be of any avail, must be of the most diverse kind, and must be chiefly directed to the hyperesthetic nervous system, with a view of sustaining, strengthening, and increasing its resistance to the added strain. Under the burden of our modern civilization the sensitive nervous system is generally the first to suffer, and consequently we have developed a state of lessened resistance, which perhaps may be better expressed in the more familiar term of neurasthenia. Under ordinary conditions the individual may not be conscious of this state of lowered vitality, but when pregnancy occurs in such a one the delicate nervous apparatus shows an abnormal sensibility to the physiologic change that manifests itself in various reflex phenomena. When in connection with this lessened resistance there exists a local lesion either of the organs of generation or of the gastro-intestinal tract, the effect will be all the more marked.

In the ordinary vomiting of pregnancy the food that has just been taken is vomited without much effort, and there is an absence of nausea and ptyalism, thus showing that the higher nervous centers are not involved in the action; it is merely a reflex act, peripheral in origin, the afferent impulses proceeding from the stomach; it does not extend beyond the vomiting and respiratory centers in the medulla. On the contrary, however, when nausea and ptyalism coëxist with this act the afferent impulses proceed from the higher nervous centers, and the act of vomiting occurs independently of impulses received from the stomach. Therefore, as nausea and ptyalism are always present in any case of severe vomiting of pregnancy, it shows that the nervous system is mostly at fault, and that there is a lack of coördination between the higher nervous centers that manifests itself by this abnormal action of the alimentary canal.

I shall not attempt to enumerate the drugs that have been used in this affection; their name is legion; it is enough to say that those remedies that act as sedatives

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[1] Read before the Alumnæ of the Woman's Medical College May 5, 1893.

to the nervous system, such as bromids, chloral, and opium, have yielded the best results.

It is understood that if there be a local lesion present treatment must, if possible, be directed toward its removal. Varied, strange, and amusing, indeed, are some of the accounts of the treatment of this disease. A Frenchman reports a desperate case successfully cured by hypnotism; a Russian, the cure of an equally serious case by injections of morphin into the fetal sac.

I shall now report a case that came under my own observation. The patient, M. T., is an American, of pronounced neurotic type; her family record is not good, as shown by the following history. The father died of pulmonary tuberculosis shortly before the daughter's birth; one brother has since died of the same disease, and another one is at present suffering with it. A sister died of convulsions (cause unknown) during a pregnancy; the mother is still living, and has always been an inveterate alcoholic. The personal history of this woman is as follows:

She had always been healthy until puberty, which occurred at sixteen years of age; she then had a violent attack of chorea, for which she remained at the Orthopedic Hospital three months under the care of Dr. Wharton Sinkler; she was married at eighteen, and shortly became pregnant. Up to the eighth month of pregnancy vomiting and ptyalism existed to a profound degree. About one year after the birth of her child she had an attack of typhoid fever. One month after recovery from this disease she again became pregnant, and vomiting and ptyalism again made their appearance, but in a more aggravated form, so that at one time her attending physician, the late Dr. Elijah B. Shapleigh, considered the advisability of an abortion, but as her condition gradually improved the idea was abandoned. I saw her on the 18th of March, 1892. She stated that she was pregnant for the third time, and that she thought she had been so for about six weeks, as she had seen nothing of her menses since the 10th of February. Vomiting, nausea, and ptyalism had been present for about four weeks, and these derangements had so steadily increased in severity that not even water could be retained on the stomach. The mere sight of water was sufficient to cause a flow of saliva, and then the effort made to swallow it would bring on an attack of vomiting. This flow of saliva was so profuse that, without exaggeration, in a few hours a quart could be collected by allowing it to dribble into a basin. Calomel, cerium oxalate, bismuth subnitrate, wine of ipecacuanha, cocain hydrochlorate, soda-water, champagne, blisters and sinapisms to the epigastrium; morphin and atropin, hypodermatically; bromids and chloral by the rectum, were successively tried, without producing any effect whatever; the vomiting and ptyalism continued incessantly, both by night and by day, and independently of either food or drink. On the morning of the 22d rectal feeding was begun, peptonized milk being used for the purpose; the woman's pulse now rose to 120, and the prostration was extreme. Her physical appearance was most abject; she lay in a profound stupor, only arousing to perform the almost incessant act of vomiting, and during the intervals of the vomiting the saliva dribbling from her mouth over everything. She had marked Cheyne-Stokes respiration, and it was impossible to rouse her.

Dr. Eleanor C. Jones and Dr. F. X. Dercum saw the woman with me on the morning of the 23d. The advisability of performing an abortion was discussed, but we decided to wait a little while before resorting to such an extreme measure. The following plan of treatment was instituted: Opium, bromids, and chloral by the bowel were ordered, to act as sedatives to the nervous system; rectal feeding with peptonized milk, liquid peptones, and whiskey; hypodermatic medication of atropin, strychnin, and digitalis to support her strength. Two days in succession the cervix was dilated with rapid dilators, and iodin was applied to the canal and to the vault of the vagina. High rectal injections were also given, in order to move the bowels thoroughly, so as to be sure that the vomiting (as the matter ejected sometimes had a characteristic fecal odor) was not due to obstruction of the bowel. The food and medicines given by the rectum were retained and the patient soon began to show some signs of improvement, as she vomited only from about fifteen to twenty times in the twenty-four hours. Dr. Joseph Price saw the patient with me on the 26th; he approved of the treatment pursued, and as her condition was slightly better advised that an abortion be deferred. On the 28th she refused further medication by the hypodermatic method, and the medicines that had been so administered were continued by the bowel, the dosage being doubled. The patient ceased vomiting suddenly on April 1st, after partaking of a lamb chop; she was, however, still partially nourished, as well as medicated, by the bowel. She gradually improved, and by April 6th all medicine and food were taken by the mouth and were retained.

I was again summoned to see her on April 25th, vomiting, ptyalism, and nausea having recommenced on the 23d. The same treatment was again resorted to, but this time without any result. She rapidly grew worse, and her condition again became alarming; then the same stuporous state as formerly developed, with occasional intervals of violent delirium; at times her suffering seemed unbearable, and as she threatened to commit suicide she was closely watched. Active interference was postponed from day to day with the hope that this condition would cease as suddenly as before.

On May 8th, after a consultation with Dr. Joseph Price, an abortion was performed. For this purpose two rubber catheters were introduced to the fundus and allowed to remain, the vagina being packed with wool to keep them in place. On the 10th, twins —a boy and a girl—in separate sacs, and from ten to twelve weeks old, were delivered; the placental tissue was adherent; and on the 11th, without etherizing her (for she was in a very precarious state), it was detached with the aid of a curet. The uterus was thoroughly washed out with a solution of mercuric chlorid 1:4000. Although the vomiting, nausea, and ptyalism ceased immediately after the expulsion of the contents of the uterus, there was now such extreme prostration and emaciation as to make recovery exceedingly doubtful. Respiration was 50, the pulse 180, the temperature 102°. The treatment was now chiefly directed toward improving the strength, stimulants being freely ordered for the purpose. The woman continued in this

condition, with but slight variation in respiration, pulse, and temperature until May 16th, when she had a severe chill, her temperature rising to 104°. She complained of intense pain during urination and defecation, and a physical examination revealed a mass about the size of a hen's egg in the right broad ligament. Large doses of quinin were given her, and cantharidal blisters were applied to the iliac regions, with large douches of hot water for the vagina. An ice-bag was placed over the precordial region, as the heart's action was violent and rapid; this soon made an impression upon this complication. For several weeks following the abortion the patient had various delusions, and at times was so violent that it was difficult to restrain her and impossible to keep her in bed; but as time passed and she regained strength these gradually disappeared. She made a complete recovery in almost two months.

It seems remarkable in this case that after vomiting had once ceased and apparent recovery had taken place vomiting should have again recurred. I know that it is a physiologic law that the child goes on developing at the expense of the mother, no matter what her physical condition may be; but nevertheless I would offer this explanation, that in the absence of all nourishment for several weeks the fetuses developed very slowly, and therefore for a little while the cause of these nervous manifestations remained in abeyance, but as the nutrition of the mother improved and their development went on in a more vigorous manner the same conditions presented themselves. I am also of the opinion that if there had been but a single pregnancy it would have gone to full term as previously, but the reflex irritation, produced by the more rapidly developing uterus under the conditions mentioned, being so much greater, the nervous system could not resist it. At the seventh week of pregnancy the uterus was so much larger than one would expect at that period that she was told that she must be mistaken in regard to the time, *i. e.*, was further advanced than she thought, but she assured us positively that she was right, and of course the possibility of a twin pregnancy never occurred to us.

A CASE OF ANKYLOSTOMIASIS.

BY W. L. BLICKHAHN, M.D.,
OF ST. LOUIS.

CASES of ankylostomiasis (*Egyptian Chlorosis, St. Gothard Tunnel Disease*) are certainly rare, if not unknown, in the United States. I have been unable to find a record of a previous report of the occurrence of ankylostomum in this country.

The patient whose case I report is a German carpenter, a native of Oberhausen, near Essen, in the Rhineland, and had been a resident of America seventeen months when he came under observation at the St. Louis City Hospital.

I think there is but little doubt that he brought his parasites with him, as ankylostomiasis is not so rare in the region of the Rhine whence he came. It was at first thought that he had contracted his disease here, having been employed in a brick-works in St. Louis. He claims to have been in perfect health before coming here. He sailed from Bremen, landed in New York, and came direct to St. Louis, arriving May 1, 1892. His first employment was in car-shops, which he left to work in a brick-yard, where he was engaged in digging the clay. After several weeks' work his legs became sore, in consequence of what, from his description, seems to have been a pustular eczema, and he quit work. He began again in a lumber-yard, giving up the latter in a short while, as the labor was too heavy for him; he was then employed in a collar-shop.

During his first summer, and while working in the brick-yard, he suffered with digestive disturbances, ascribing his derangement to the use of ice-water, to which he was unaccustomed. His friends noticed that he began to lose the fresh and the rosy color that he had when he arrived. He felt tired and weak, but continued working, growing paler and weaker, having pains in his stomach and bowels, with variable appetite and frequent diarrheas until June 6, 1893, when he took to his bed, a little more than a year after his arrival and not quite a year from the beginning of his gastro-intestinal symptoms, which have continued up to date. He was treated privately until he entered the hospital at the end of the past September.

Parasites.
(Naked-eye appearance.)

Ova. (Zeiss, DD, oc. 2.)

My attention was called to him as an example of a case of extreme anemia the etiology of which was obscure.

Physical examination was negative, with the exception of pain on pressure just above the umbilicus. The man was extremely pale. He presented not a waxy or greenish or yellowish hue, but a simple pallor. He was not emaciated, the outlines of the body being well rounded, but he was extremely weak. His appetite was fair, and because of frequent severe pains after eating, especially solids, care was necessary in the selection of his diet. The bowels were variable; as a rule, the discharges were rather thin and varying as to frequency, the color usually brownish to black; there was no emesis, and no hemorrhage. There was slight edema of the right ankle. Urinalysis was negative. The blood was very thin—"800,000 reds to the cubic millimeter" was the memorandum in the case-record. I subjected the blood to a careful microscopic examination. No malaria had been suggested as the cause of the anemia. I could find no plasmodia. The blood resembled that of pernicious anemia. There was marked leukocytosis and poikilocytosis, and great variations in size of the red blood-corpuscles. There were many large mononuclear and multinuclear leukocytes, the lymphocytes being in the minority. The α and γ granulations (Ehrlich) were sufficiently numerous to awaken the suspicion of the case being one of myelogenous leukemia.

As intestinal parasites, especially the one under consideration, are frequent causes of extreme anemia, and as the examination of the stools had been overlooked, I secured some of the feces, which were quite fluid, and

the microscope very promptly revealed the presence of large numbers of the ova of the ankylostomum.

I presented the case to the Verein Deutscher Aerzte on October 13th, detailing the case and demonstrating the eggs.

An attempt to develop the parasite from the ova was unsuccessful, but a dose of filix mas furnished large numbers of the parasite, which varied from seven to fifteen millimeters in length, being less than a millimeter in diameter.

I examined quite a number of the worms, but found no males—those found seemed all to be females. Probably the next batch passed may have been made up more exclusively of males. This variation as to the predominance of one sex over the other has often been noted, the severity of the anemia seemingly being the greater when the female worm predominated.

The clinical picture of the case tallies fairly well with the clinical phenomena usually described: Extreme pallor, weakness without emaciation, the body being well-rounded (fat, not edema), some slight rise of temperature, gastro-intestinal disturbance, no kidney-complications, neither enlarged spleen (Völkers reports splenic enlargement in two out of three cases) nor liver.

A number of observers have noted hemoglobinemia, but no leukocytosis. The latter was marked in the case under consideration, as it was in a case reported by Fränkel, in which "the blood was leukemic, and at the autopsy the bones resembled the condition characteristic of myelogenous leukemia." The same was noted in a post-mortem record of Cohnheim (diagnosis: Pernicious Anemia).

It has been frequently urged, and all clinical microscopists and teachers advise, that in all cases of anemia the stools should be subjected to microscopic scrutiny. If the report of this case will awaken a more general interest in clinical microscopy, without which the diagnosis in this instance could certainly not have been made, it will have served its purpose. In looking over the literature I found information in an article in the *Reference Handbook of the Medical Sciences*, article Nematodes, vol. v, page 134, by Charles E. Hackley, to the effect that the diagnosis must be made by the symptoms, as neither the ova nor the parasites had as yet been found in the dejecta, though it was possible that a careful microscopic examination of the stools *might* reveal either. In this case, and so far as I can learn in all cases, ova are plentiful in the stools; the parasite, on the contrary, is rarely or never found except after the use of remedies used for their destruction.

Frequent examinations of the stools are necessary for weeks after a supposed cure, to be certain there are no ova and that the cure is one in reality.

For the privilege of examining and reporting this case I am indebted to Dr. H. Marks, Surgeon-in-charge of the St. Louis City Hospital.

4049 OLIVE ST.

Hospitals Acquire No Lien against a Railroad.—Medical attendance and board furnished by a hospital to an employé of a railroad company, who has been injured and disabled in its service, are not, according to a decision of the United States Circuit Court, "supplies necessary to the operation of the railroad," within the terms of a statute which gives a lien therefor.

A RENAL CALCULUS.

BY RICHARD SLEE, M.D.,
OF SWIFTWATER, PA.

IN conducting post-mortem examinations pathologists frequently expose existing conditions calculated to make the surgeon sigh to think of the justifiable opportunity for surgical work *lost* through the absence in many cases of tangible symptoms.

The subject of this sketch is a fair example of such a case.

An Italian, about forty-five years old, was recently admitted to the Methodist Episcopal Hospital of Brooklyn, and placed in the First Surgical Division under the care of Dr. Louis S. Pilcher.

He was suffering from *old* prostatic and urethral disease. A tight urethral stricture had for many years given him considerable difficulty in micturition. At the time of his admittance he passed all urine through a number of perineal sinuses, and his general condition was exceedingly poor.

The perineum was perforated by a number of sinuses, extending in various directions, with pockets here and there containing urine, débris, and slough.

Extensive curetting was required to remove the sloughing tissues and place the parts in a condition to justify an expectation of repair. Operative interference was, however, a "forlorn hope" in his case, and he died several days later from asthenia.

The post-mortem findings of interest were confined to the genito-urinary tract, which was removed *en masse* for preservation. The urethra was found to be the seat of several strictures; one very low down was tight enough to prevent the passage of a filiform bougie. The prostatic body was entirely destroyed by the sloughing process; the bladder was perforated on its posterior surface near the neck, and through this opening the urine made its escape.

The bladder was greatly dilated, and its walls were

enormously thickened; the mucous membrane bore no resemblance to the normal structure, having large phosfatic masses of deposit scattered here and there over its surface, and being markedly necrotic where it was not the seat of this deposit.

The ureters were much thickened and dilated at all points, permitting the introduction of one's little finger, and presenting the appearance of an exaggerated varicose vein. Each was capable of holding about half a pint of urine.

In the left kidney was found an enormous calculus, from which I made the accompanying drawing (actual size), weighing 350 grains, and composed principally of calcium salts, with a spiral-shaped band of uric acid deposited on the body or the pelvic portion. The body of the calculus is dense in structure, while the branching processes formed in the calices are tufted with large crystals, the whole suggesting in its appearance a sprig of coral.

The horn-like projection at the lower extremity of the drawing was lodged in the upper extremity of the ureter, and the calculus was found in about the position shown with relation to the anterior abdominal walls.

The working portion of the kidney was entirely destroyed, the mass consisting almost entirely of fibrous tissue, which was tucked in and around the irregular surfaces of the stone and was firm enough to retain its shape after removal of the calculus. Some free pus was found in the pockets. The necrotic process, however, was not as active as one would expect from the size, shape, and structure of the calculus.

The left kidney was practically normal, save for a well-marked compensatory hypertrophy.

Renal calculi are by no means rare. This, however, seems rather an unusual one in size and shape, and, I think, worthy of record. Several that I have come across have been almost as large, but the deposits were chiefly confined to the pelvic portion of the kidney, and did not make as perfect a cast of the cavities of the organ as this.

MULTIPLE PAPILLOMATA IN A CHILD:

Tracheotomy at Four Years of Age; Retention of Canula Thirteen Years; Evulsion of Multiple Laryngeal and Pharyngeal Neoplasms; Closure of the Tracheal Fistule by a Cutaneous Flap; Recurrent or Repullulant Growth at the Anterior Commissure of the Glottis.

BY J. SOLIS-COHEN, M.D.,
HONORARY PROFESSOR OF LARYNGOLOGY, JEFFERSON MEDICAL COLLEGE.

THIS instructive and long-time neglected case was sent to my clinic in April, 1892, by Dr. Harter, of Maytown, Pa.

The patient, a girl seventeen years of age, but less fully developed than many a child of fourteen or even less, was completely aphonic, and was wearing a child's tracheotomy-tube.

Her story was that at four years of age, after suffering frequently with what was supposed to be croup, tumors in the larynx were diagnosticated by the late Dr. John Atlee, of Lancaster, Pa., than whom there have rarely been better surgeons. Dr. Atlee performed tracheotomy and inserted a double canula. This appliance was used for eleven years without any withdrawal of the outer tube by her attendants, when it was found to have become corroded. Then a new canula was inserted and this second one had not been removed up to the time the patient was brought to me. On removing it I found it so corroded that I deemed it imprudent to replace it, and therefore substituted another.

Laryngoscopic inspection revealed multiple neoplasms filling the upper portion of the larynx and extending along the laryngeal face of the epiglottis almost to its very tip. There were likewise a few multiple neoplasms at the base of the tongue, and along the pharyngo-epiglottic and glosso-pharyngeal folds.

The patient was admitted to the hospital, where my clinical aids, with some assistance from me, removed in a number of sittings all the morbid growths, chiefly with forceps; about a month being consumed in the procedures, and the voice returning in a satisfactory manner both for conversation and for singing.

After waiting for a few weeks, without noting any evidence of recurrence or repullulation, I removed the canula definitely at the end of June, and sent the patient home with directions to report in October, when my clinical services at the hospital would be resumed.

When she returned there was still no evidence of recurrence. The fistule in the neck, however, was as large as ever, and I determined to close it with a cutaneous flap. So on October 7th, before my clinical class, I dissected out the cicatricial tissue around the fistula, so as to leave an oval section in the integument, with bevelled edges from without inward. A flap of integument was then raised from over the sternum, and so bevelled on the edges that when the flap was turned up, skin-surface inward, its edges would fit into the bevelled seat prepared for it around the fistula, somewhat like a stone is set in a piece of jewelry. The parts were carefully stitched as far around to the pedicle of the flap as possible. The fat of the flap was then snipped away with scissors, and the raw flap was dressed with sulphuric ether so as to dissolve any remaining fat during the healing process. The wound in the tissue from which the flap had been raised, and which had gaped widely by retraction during the fitting of the flap in its new and reversed position, was drawn together with sutures, except a triangular portion superiorly and just beneath the pedicle of the inversion, and which had to be left to heal by granulation.

The flap adhered well and thoroughly to the parts to which it had been stitched, and there was no necessity to release the pedicle to fill in the gap in the healthy tissues. Nature's unaided efforts were sufficient to cause absorption of the exuberant duplicature at the pedicle, and to gradually skin the raw surface of the flap with cicatricial tissue, so that there was no further occasion for professional supervision at the end of a month, when the patient was dismissed with instructions to report at the end of a year, or sooner, should anything untoward occur.

On October 17, 1893, the patient reported at the clinic very much improved in appearance, and with a clear voice of greatly increased volume. She had gained ten pounds in weight. The cicatricial tissue over and around the position of the fistula was in excellent condition, and except for a glossy aspect was not notably distinguishable from normal integument.

On examining the larynx, I detected a small, red, pedunculated pyramidal growth, about the size of a small pea, at the anterior commissure of the glottis and hanging below the vocal bands so that it did not interfere sufficiently with phonation to produce hoarseness. The voice, indeed, was shrill rather than deep. Whether this was a recurrent growth, or a repullulation from fragments left in extracting the growths the year previously, cannot be determined. It might be of either, but was probably of the latter character. It had occasioned no symptoms whatever indicative of laryngeal disorder. This little growth was readily removed with forceps.

MEDICAL PROGRESS.

Exophthalmic Goiter Fatal after Extirpation of the Uterus during Pregnancy for Fibromata.—BROOMALL (*New York Journal of Gynecology and Obstetrics*, vol. iii, No. 11, p. 978) has reported the case of a woman, thirty years old, pregnant for the second time, who presented protrusion of the eyeballs, tachycardia and bronchocele, with insomnia, headache, and dyspnea. Some of the bones, but not the pelvis, displayed evidences of rhachitis. Examination disclosed the presence of many small nodules in the walls of the uterus, and of one large fibroma near the fundus, while the pelvic cavity was occupied by a round, firm body, having its attachment to the cervix, and preventing the recognition of any portion of the fetus *per vaginam*. The pregnancy had advanced to the seventh month. The patient suffered a good deal from attacks of vomiting, accompanied by dyspnea and irregularity and rapidity of action of the heart. In the course of a month her condition had become alarming, all of the symptoms being aggravated, and the general suffering increased by painful uterine contractions. During the development of the lower uterine segment the resistance of the cervical fibroma excited the uterus to painful spasmodic action, with the result of forcing the tumor lower down in the pelvic cavity, and causing complete obstruction to the descent of the fetal head. As the condition of the patient demanded immediate relief, and as delivery through the natural passages was considered out of the question, extirpation of the uterus was decided upon and carried out. The child was asphyxiated, and died after half an hour. During the extraction of the fetus, uterine hemorrhage was prevented by manual compression of the cervix; after delivery, an elastic ligature was substituted for the fingers of an assistant. Later, in the adjustment of the serre-neud, it was found that the cervical fibroma could not be drawn above the constricting cord, and that the pedicle was too thick. As the patient would have been exposed to the danger of infection if the tumor were allowed to remain partially constricted by the serre-neud, or to the danger of hemorrhage if the temporary tourniquet were relaxed sufficiently to permit of the enucleation of the growth, the peritoneal covering was slit below the elastic cord, the cut edges of the peritoneum caught, and the tumor enucleated without much difficulty. The surrounding peritoneum and connective tissue were then drawn above the serre-neud and made part of the stump, which was slender and long enough to be brought out at the lower angle of the abdominal wound. Though the loss of blood was not excessive, and the symptoms of shock not greater than usual after similar operations, the action of the heart was feeble and rapid. The woman did fairly well until the nineteenth day after the operation, when she suddenly became very restless and complained of severe pain in the epigastrium. The pulse was rapid and feeble, and death occurred on the following day. Upon post-mortem examination the abdominal wound was found firmly united, with slight suppuration around the stump, and a few drops of pus in an abdominal stitch-sinus. There was no peritonitis, and only slight adhesion between the omentum and the stump. The kidneys and liver were normal. The heart was large; its walls thinned; the endocardium injected; but there was no valvular defect and no heart-clot. Death is ascribed to the primary disease, exophthalmic goiter.

Hemorrhagic Pachymeningitis, with Focal Epilepsy.—EUSTACE and PARSONS (*Dublin Journal of Medical Science*, November, 1893, p. 369) have reported the case of a man, twenty-eight years old, who for a year had suffered from attacks of petit mal and manifested some symptoms of paretic dementia. His father suffered from paralysis agitans, a sister was hysteric, and an uncle had died of syphilitic general paralysis of the insane. It was certain that the patient was not addicted to alcohol or sexual excess; nor had he contracted syphilis. There was a vague history of a blow upon the head during childhood, but medical attendance was not required, and no scar could be found. On one occasion the patient had attempted to injure his sister with a pruning-knife. The man appeared intensely happy, was garrulous and seemed pleased with his surroundings, and did not appear to find the restraint of asylum-life irksome. He was vain and boastful, but apparently in good physical health. While under observation he had a convulsion in which he turned pale and suddenly fell to the floor, the left arm and leg being more actively moved than the members on the right side. The left side, and particularly the arm and the leg, was bloodless, cold, and paralyzed. The probability of the existence of a tumor affecting the right hemisphere of the brain was discussed, but the signs were not deemed sufficient to warrant operative interference. The convulsive attacks were repeated during the subsequent two years, despite the administration of bromids and other treatment. The patient believed that he could ward off an attack by the use of antipyrin, or by tying a string around his left wrist. He also believed that sitting near a fire or in a very warm room induced an attack. The attack proper was preceded by a premonitory stage, lasting four or five minutes, though sometimes this occurred without being followed by an attack. The left thumb, as a rule, commenced to twitch first. The convulsive stage varied greatly in intensity and duration, lasting from two to fifteen, or even thirty minutes. The pulse during this stage was small and hard, but as soon as the man passed into the comatose stage the pulse became full, rapid, and bounding, increasing from 60 or 70 to 100 or 110, and the frontal arteries stood out like thick cords. In the attack there was conjugate deviation of the eyes to the left. The post-paroxysmal stage lasted from a half-hour to two hours, or even longer. The man's condition fluctuated from time to time, but at the end of two years the

right side of the body became paralyzed following a convulsive seizure, aphasia developing after some subsequent seizures. From now on the condition of the patient became progressively worse. The dementia became more profound; control of the sphincters was lost; the pupils were closely contracted; the reflexes were exaggerated. Finally, bedsores developed, and an attack of pneumonia led to a fatal issue. Upon post-mortem examination an extensive hemorrhagic membrane about three-sixteenths of an inch thick was found covering the whole of the left cerebral hemisphere, with the exception of the base, while the right hemisphere was covered by a similar membrane, though of greater thickness in places, the posterior portion of the frontal and parietal lobes being flattened and softened by the pressure of the membrane.

Changes in the Spinal Cord in the Course of Pernicious Anemia.—In fatal cases of pernicious anemia which during life presented no disorder of the nervous system, MINNICH (*Zeitschr.' f. klin. Med.*, B. xxii, H. 1, 2, *Centralb. f. klin. Med.*, 1893, No. 43, p. 914) has found after death changes of two varieties. The one consisted in capillary hemorrhages in the spinal cord, with their sequelæ, miliary scleroses. These hemorrhages are analogous to the retinal hemorrhages that take place under like conditions. The second group of cases were characterized by peculiar areas of softening. Similar changes were also found in cases in which death had resulted from nephritis, icterus gravis, and leukemia. These areas microscopically presented profound changes, which could be traced from the simple swelling of the nerve-fibers to accumulations of disintegrated tissue. It is pointed out that if this variety of softening exist in association with true primary spinal degeneration, it may obscure both the clinical and the pathologic picture. It is further believed to be not impossible that the occurrence of this (hydropic) degeneration, in the course of severe diseases, may furnish the basis, subsequently, for true degenerative processes in the spinal cord. Control-observations showed that the alterations found were not the result of artefacts, or due to post-mortem change.

Curetting of the Trachea for the Relief of Diphtheric Obstruction.—SCUDDER (*Boston Medical and Surgical Journal*, 1893, No. 19, vol. cxxix, p. 465) has reported the case of a boy, four years old, in which tracheotomy was performed early on account of increased difficulty in breathing. All went well until the second day after the operation, when the secretion from the tube became a little sticky and slightly diminished in amount. On the third day there was serious trouble. The secretion became still less, the respiration rapid and labored, and the child cyanosed and exhausted. All of the ordinary measures failing, a dull-wire curet that happened to be at hand was introduced into the wound and gently carried to the bifurcation of the trachea, and all sides of the passage were systematically and thoroughly curetted. In the progress of the operation pieces of membrane, one of which made a complete cast of the circumference of the trachea, were withdrawn through the wound. The hemorrhage was slight. The relief to the dyspnea was immediate. The tube was replaced and the child made an uninterrupted recovery. One or two additional pieces of membrane came away on the following day. The child was well and strong two years later.

THERAPEUTIC NOTES.

Spinal Drainage in Acute Meningitis.—PAGET (*Lancet*, No. 3658, p. 873) has reported a case of acute meningitis in a boy eight years old, attended with vomiting, drowsiness, restlessness, abolition of knee-jerks, retraction of the head, occasional strabismus, dilatation and immobility of the pupils, swelling and blurring of the optic discs, incontinence of the sphincters, and marked wasting, in which the dura mater was freely opened between the fourth and fifth cervical vertebræ, a horsehair drain introduced, and the wound closed around it. The operation gave relief for one day, but death ensued four days after the operation. Upon post-mortem examination accumulations of fluid were found in the middle and posterior cerebral fossæ, and the convolutions were greatly flattened. The third and fourth ventricles contained an excess of fluid. The pia mater at the base of the brain was infiltrated with sero-purulent lymph and showed a few minute tubercles. The opinion is expressed that the general swelling of the brain that existed was the chief cause of death, and the suggestion is made that it might be advisable in a similar case to make a free opening into the vault of the skull after incising the dura of the cervical spine.

Subcutaneous Infusion in Eclampsia Gravidarum.—PORAK (*Lancet*, No. 3658, p. 901) reports the successful treatment of a number of cases of puerperal eclampsia by means of subcutaneous injections of a saline solution. A quart of sterilized water, to which from a dram and a half to two drams of sodium chlorid have been added, and at the temperature of the body, is slowly injected into the buttock by means of a hand apparatus or a fountain syringe, and absorption is facilitated and favored by gentle massage. Of eight cases thus treated recovery took place in six. In one of the cases that terminated fatally the patient was moribund when she came under observation, and the other died at home, whither she had been taken contrary to medical advice.

For Gastric Ulcer.—

(HEPP.)

℞.—Chloroformi . . . . . 1.
Bismuthi subnit. . . . . 3ss.
Aquæ destil. . . . . 150.—M.
S.—To be taken every hour or two hours.

(BOAZ.)

℞.—Argenti nitrat. 0.03
Aquæ destil. . . . . 120.—M.
S.—A tablespoonful three times a day on an empty stomach.

Corr.-bl. f. Schw. Aerzte, No. 20.

For Fermentative Dyspepsia.—

℞.—Ol. creosoti puri. . . . ♏xij.
Spt. tenuoris . . . . fʒijss.
Ammonii benzoat. . . . ʒij.
Glycerin. puri. . . . fʒvj.
Infus. caryophylli . . ad fʒvj.—M.
S.—A tablespoonful two or three times a day between meals in water.

The Asclepiad, 2d quarter, 1893.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

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SATURDAY, DECEMBER 9, 1893.

"CRANKS."

THE recent assassination of the Mayor of Chicago has renewed public interest in the features of homicidal mania and has led to considerable miscellaneous suggestion on the part of laymen, especially through the press, as to the methods of dealing with such dangers. In all this discussion one may distinguish much evidence of feeling and desire for the administration of commensurate punishment, with but little logical consideration of the subject or even knowledge of the conditions that lead to the acts. The non-medical portions of the community, unfortunately very largely the lawyers and newspaper people, do not appreciate the nature of delusional diseases, do not realize the frequency of instances in which men lose all sense of responsibility, and under which they are regardless of possible harm to themselves. Swift and even cruel methods of punishment may have their value. The court of Judge Lynch may not be without a certain usefulness in a wild section, just as the summary proceedings of a court-martial are universally regarded as befitting an actual state of war, but the majority of people do not understand that measures which appeal to the fears of evil-doers cannot be felt by those who are driven by an overpowering delusion. The murder of GARFIELD aroused the nation to the highest pitch of resentment. At the time of the trial the theory of GUITEAU'S insanity was rejected by most persons, yet at the present time it is generally accepted. The line that separates such deluded persons from the criminals proper is a distinct one and has long been recognized by alienists. The community, however, pays almost no notice to homicidal maniacs until some shining mark is struck down, when a wave of discussion passes across the land, soon subsiding into indifference.

These problems cannot be rationally discussed except from medical standpoints. Until our jurisprudence awakens to the consciousness that these acts are the result of disease, bringing the victim into the domain of irresponsibility, no adequate measures will be secured. Learned judges are not infrequently the most serious obstacles to a scientific consideration of these questions. Precedent goes for much in law, and principles laid down by chief justices generations ago are cited in opposition to the scientific demonstrations of physiology and pathology. In a case tried some years ago in this city a defence of insanity was justly set up, and the trial judge, one of the most learned and just of judges, said, in comment on the statement of an expert, "Well, that is the kind of insanity we hang for in Pennsylvania." This reply evinces the difficulty in utilizing the scientific knowledge now at hand.

It is, however, not merely with the more flagrant cases of delusional mania that a reform is needed. Authorities are too indifferent toward milder forms which may lead to many petty annoyances, crimes of less note, or ultimately to murder. It is not unnatural that, in a community in which freedom is the watchword, every guard should be thrown around the citizen to secure to him his liberty, but an extreme sensitiveness in this respect leads to danger. So great has been the popular feeling on the question of the possibility of confining sane persons in asylums that the machinery of the law is easily invoked to secure the discharge of the moderately insane. Juries frequently adjudge a man sane concerning whom competent expert testimony has demonstrated insanity. Moreover, in such cases the experts are likely to be criticised severely, even abusively, by the newspapers, and hence hesitate to speak as freely and as often as they might. The murderers of GARFIELD and HARRISON belong to a class of persons very numerous, but exhibiting many grades of disease, from violent delusions tending to homicidal acts to mere feelings of distrust of those with whom

they are most nearly associated. Not until all these cases come to be regarded as objects for diagnosis and treatment in the hands of the medical profession as absolutely as any other disease, will they be properly assigned. How absurd would it be to submit to an ordinary jury the determination of the question as to the existence or non-existence of diphtheria, carcinoma, or brain-tumor. In earlier days when mankind believed in demoniac possession, when the nature of insanity was not known, and when great danger existed of the unlawful confinement of persons, we can appreciate the value of the writ of *habeas corpus* and the right to a traverse before a jury, but our knowledge of mental disease is now enriched by scientific methods, and no such dangers can ensue.

The whole question is, therefore, not one for lawyers but for doctors, and it is hoped that in default of uniform methods by the States themselves some means may be found to secure national legislation that may eliminate from our courts methods of procedure that grew out of ignorance. It is also desirable that the community at large shall awaken to the necessity of providing means and methods of restraint for delusional maniacs of all grades and, among other efforts, aim to prevent the propagation of such defective strains.

THE TRANSMISSION OF ENTERIC FEVER BY WATER.

THERE can be no question that the most frequent mode of transmission of enteric fever is through the intermediation of the water-supply. Next in frequency is the milk-supply, but this may ordinarily be included in the first, because there is nothing peculiar to milk itself or its source that should make it a carrier of infection, apart from procedures concerned in its manipulation and distribution. This contamination of milk need not necessarily be a result of premeditated adulteration or dilution, but may take place from the legitimate use of water for purposes of ordinary cleanliness. Besides, the possibility of direct contamination of milk through an infected person must also not be ignored. Other possible channels of communication are infected ice, infected vegetables, and defective sewerage or plumbing.

SEDGWICK and CHAPIN[1] detail an analysis of an epidemic of enteric fever in the city of Springfield, Massachusetts, and SEDGWICK[1] reports the results of an investigation of an epidemic of enteric fever in Somerville, Massachusetts, both of which upon careful inquiry were found to be due to infected milk. In the first instance the cases occurred in one of the best parts of the city from a sanitary point of view, but among families supplied with milk from a common source. Some little difficulty was at first experienced in tracing the ultimate channel of infection, but upon persistent and diligent investigation it was found that some cases of enteric fever had occurred at the dairy whence the suspected milk was derived. It was learned that for purposes of preservation the not quite full cans containing the milk were for a time submerged in a well that there was ample reason to believe had become contaminated by the dejecta from the cases of enteric fever, and it was further found that these cans were not so hermetically closed as to prevent the entrance of water. The number of cases discovered and investigated in this epidemic was 150, and the number of deaths 25. Of the whole number 101 had directly received milk from the incriminated source, while 34 others had access to the same milk.

In the second instance reported it was at once discerned that the cases also occurred particularly among the customers of one milkman. Further investigation disclosed that a son of this man who participated in the handling of the milk-cans, if not of the milk itself, had an attack of enteric fever, at first unrecognized, and throughout a large part of which he had continued at work; and it is reasonably surmised that he in some more or less obvious manner was the medium of infection. Thirty-two cases were traceable to this common cause. Of this number thirty had been supplied with or had access to milk supplied from the suspected source.

These two reports, the essence of which we have here reproduced, illustrate admirably how difficult it sometimes is to trace a source of infection, and they reflect great credit upon those who undertook and carried the investigation to a successful issue.

Many similar reports have been published, and the data are abundant showing the intimate relation between the spread of enteric fever and contamination of the water-supply and of the milk-supply, and we shall only further briefly refer to the report by DABNEY (THE NEWS, December 2, 1893, p. 630) of an epidemic of enteric fever involving fourteen

[1] Boston Medical and Surgical Journal, vol. cxxix, No. 20, p. 485.

[1] Ibid., p. 489.

students in the University of Virginia. These lived in different parts of the institution, but all took their meals at the same hotel, one of the employés of which was found also to be ill with enteric fever. There was nothing about the hotel itself to account for the sickness, but it was learned that a part of the milk-supply was derived from the dairy of the keeper of the hotel, and further investigation disclosed the fact that the udders of the cows from which the milk was obtained were washed with water obtained from a creek into which a sewer emptied at a point above the dairy and, in addition, into which probably the dejecta of a previous case of enteric fever, thrown on the ground and not disinfected, had been washed.

There seem to be but a few words to add, but the importance of these cannot be exaggerated. They are that *if all water and all milk used for personal and domestic purposes were sterilized enteric fever would soon disappear.* An approximation to this desirable end is attainable in a rigid scrutiny of the water-supply and legislative supervision of the milk-supply. The benefits of such protective measures would apply not only to enteric fever but also to scarlatina, to diphtheria, to cholera, perhaps to malaria, and probably to other infectious diseases.

ELECTRIC TRACTION AS A SANITARY MEASURE.

IF it be true that misfortunes come unexpected and unbidden, "like a thief in the night," it is also true that blessings may come similarly. We do not always realize the full value of inventions until long after they are in practical operation. It seems that certain recent advances in the mechanical world are already giving evidence of benefits far more extended than was contemplated or expected at their introduction.

Electric traction is no longer an experiment, and we can foresee that it is destined to modify very largely social and commercial relations, especially of rural life. It affords a method of reducing the isolation and fixedness which is so unpleasant a feature of the farm, and which has operated so unfavorably on the mental development of its inhabitants, even according to some statisticians materially increasing the amount of insanity.

At the present time one of the large American cities is undergoing a transformation of its methods of surface transit probably more extensive than has ever occurred in a similar area, and already there is enough accomplished to show that the new conditions will result in unexpected and uncontemplated advantages. The nature of the electric motor is such that the cars operated by it are heavier than the common horse-car; this has necessitated a complete reconstruction of the tramways by the laying of a heavier and firmer rail with neater joints. This will result in firmer movement, even if swifter, and will be less fatiguing on the regular rider. Those who are obliged to ride frequently on common tramways find this fatigue no small inconvenience.

The municipal government has, however, in granting the "trolley" privileges, secured a repaving of the streets, and here has been a material gain to city sanitation. Notably, is the employment of the asphalt surface an advantage. It is, however, to be kept in mind that unless this improvement in the construction of the roadway is supplemented by greater attention to cleaning, the change may be a source of more harm than good. Asphalt and well-laid granite block pavements are practically non-absorbent. Hence, all refuse, especially the manurial refuse, which is so abundant on business streets, must be systematically and promptly removed, or it will become dry and be carried everywhere. Our advancing knowledge of the causation of disease shows us that some of the animals that mankind has for ages subjected to his government are his greatest enemies. There is a well-founded suspicion that the cow is the main distributer of one of the most widely fatal of diseases, and incidentally of other forms, and it is not unlikely that the droppings of horses so liberally supplied on our city streets are sources of contagion and infection as yet unrecognized. Now, the country road built "on ADAM'S plan, and not MACADAM'S," is an absorbent surface; the soil acts as a disinfectant for all decomposing organic matter. To secure, therefore, the benefits of our non-absorbent pavements, they must be cleaned thoroughly and repeatedly, not by sweeping, but by flushing into the sewers every night, or at least by such methods as will insure the complete removal of all dirt without allowing it to be raised in clouds to be inhaled by those passing or to settle on every level surface.

Incidentally, however, the coming of electric traction will relieve us of some of these dangers, for it will materially diminish the number of horses working on the streets, and gives us hope that the day is not far distant when lifeless motors will

do all the work in our cities, whether for business and pleasure, and the horse, with his essentially unclean habits, will be relegated to the open country.

Further are to be noted benefits to the health of the citizen by the advance in his comfort that will result from a swifter, smoother, and more commodious method of transit, better lighted cars, and the abolition of the enormous stables, reeking with the offensive odors of horse-manure, and infested with all manner of vermin. The improved condition of the streets will go far also to prevent the filthy condition of the car floors; and if, in addition, a forcible public sentiment can once operate against the spitters, surface travel will be an approach to enjoyment.

LEAVE THE CODE AS IT IS!

THE MEDICAL NEWS finds it necessary to say a few more words on the Code question in order to make its position clear. We still believe the course outlined by us in various editorials, and especially in the issues of September 17, 1892, and January 28, 1893, to be the best possible permanent solution of the Code question.

Realizing, however, that under existing circumstances this course cannot be successfully entered upon, we now announce ourselves as definitively against revision. We prefer the Code as it is to any amendment suggested publicly or privately, officially or unofficially, that seems to have any prospect of passing.

Except in one particular, the Code does not interfere with the comfort, prosperity, or freedom of any *honest and honorable* physician—for no such physician desires to do anything the Code inhibits. In the one particular referred to—namely consultations with sectarians and quacks—the few honest physicians who find the Code opposed to their sincere judgment, must yield to the will—the just and proper will—of the majority. For reasons unnecessary to repeat, that prohibition must be maintained. There is no discussion of the Code that has not been aroused by its opponents, and if these will cease their unwise agitation there will be nothing to interfere with scientific business at the meeting of the American Medical Association. Let our united efforts, then, be made on behalf of the honor and dignity of the profession as represented in "the Code as it is."

EDITORIAL COMMENTS.

A Few Little Incidents of Foot-ball.—The *Lancet* has long made it a custom to chronicle the inconsiderable mishaps that occur from time to time on the foot-ball field, and Dr. Amidon, of New York, has taken the pains to make a list from the *Lancet's* reports of those that came to the notice of the editor in the year 1892. How many casualties escaped notice cannot be told. In this year twenty-three deaths occurred in England that were directly traceable to foot-ball. Those indirect ones that occurred subsequently, or that will occur, are left for future historians. Here is Dr. Amidon's little list of the English accidents requiring hospital treatment:

Nature of Injury.	No. of Cases.
Concussion of brain	3
Injury to the head	1
Injury to the nose	1
Fracture of the nose	1
Fracture of the jaw	1
Fracture of the collar-bone	20
Dislocation of arm	1
Compound fracture of arm	3
Fracture of arm	5
Bad fracture of left arm	2
Serious injury to arm	1
Compound fracture of the elbow	1
Fracture of left wrist	1
Fracture of ribs	3
Severe sprain of thigh muscles	1
Fracture of thigh	3
Injury to leg	1
Fracture of leg	29
Bad fracture of leg	1
Compound fracture of leg	5
Fracture of knee-cap	1
Severe injury to knee-cap	2
Fracture of ankle	3
Dislocation of ankle	1
Sprained ankle, muscles, and tendons severely wrenched	1
Severe injury to foot	1
Fracture of spine	1
Serious injury to spine	1
Serious injury in groin	1
Severe internal injuries	2
Severe internal injuries, fatal in two days	1
Fatal abdominal injuries	6
Undescribed accidents followed by death	3
Undescribed accident followed by lock-jaw and death	1
Total number of grave injuries	109

For the year 1893 the returns are not yet in. In the *Lancet* of November 18th, there are recorded, as occurring during the preceding week, three cases of fractured leg; one of kick in abdomen, with death; one of concussion of spine; one of fractured clavicle; one of injury and death. This year, therefore, there have been at least twenty-eight deaths in England.

English and American Foot-ball.—Since our last issue at least two more deaths have occurred in this country from foot-ball, bringing the known total for this season up to seven.

It has been said by the enthusiasts that the English game and the American game are as different as croquet and prize-fighting, the inference being that croquet-like foot-ball is the American style of the game. In this way it is hoped the shock of responsibility will be lessened and the fact explained of the relatively lower mortality of the American game. But a moment's dispassionate reflection shows the argument to be a vexatious boome-

rang. There can be no doubt that for every ten games played in the United States there are a hundred played in England. This is a very conservative estimate. It does not need much statistical training to deduce from this fact the obvious result that if the brutal game in England kills only twenty-eight persons, while the croquet-like American game kills seven, then when ten times as many shall play the game here, our croquet-like death-rate will be at least seventy. Moreover, if, as has been averred, the brutal English game is at least ten times as brutal as our game, then, —— but we forbear!

There seems to be some justification for the saying that the difference in method between the two styles of game is that in England the rule is, "If you can't kick the ball, kick the man;" with us it is, "If you can't kick the man, kick the ball."

Of course every one knows that the cause of the greater English mortality is chiefly due to the fact that in England a larger proportion of non-college men play, miners, clerks, the unsound, untrained, everybody. The game itself is essentially the same. The greater risk, injury, and death-rate come to the untrained player. It is often remarked that the deaths do not occur here in our larger college professional teams, and precisely for the same reason. This gives occasion for the saddest thing about this whole controversy, the cold-blooded indifferentism of the foot-ball enthusiast to the injury done the inexpert, unprofessional, plebeian imitators of his example. The wrong done the community is nothing to him. But some of the college authorities still make at least pretense of Christian belief and practice. To them we would commend for rumination a principle enunciated in I. Corinthians, viii, 13.

The Infectiousness of So-called Membranous Croup.—We have on a previous occasion (see THE NEWS, July 23, 1892, p. 100) referred to the intimate relationship, if not actual identity, of so-called membranous croup and diphtheria. Confirmation of the position then taken by us comes in the form of a public announcement by the Health Department of the city of New York. The Chief Inspector of the Division of Pathology, Bacteriology, and Disinfection of the Department, Dr. H. M. Biggs, reports that of thirty-six cases of so-called membranous croup in which a bacteriologic study was made, the bacillus diphtheriæ of Loeffler was found in thirty. In all of the cases "the membrane was either confined entirely to the larynx, or at most only slight deposits existed in the throat, while there was very extensive exudation in the larynx." In six cases no diphtheric bacilli were found. These must, therefore, be considered as instances of catarrhal pseudo-diphtheric inflammation of the larynx, analogous to similar non-diphtheric pseudo-membranous inflammations of the pharynx. Five of the cases in which the bacillus of Loeffler was found were both preceded and followed within a week by other cases of pharyngeal diphtheria in the immediate vicinity; three cases were preceded by cases of true diphtheria; and seven cases were followed by other cases of diphtheria. The remaining fifteen cases were neither preceded nor followed by cases of diphtheria in the immediate vicinity. In accordance with the results of the investigation as here summarized, the Commissioner and Chairman of the Sanitary Committee of the Board of Health of New York City, Dr. Cyrus Edson, requests physicians "to report cases of membranous croup under that name, in the same manner that they report cases of contagious disease. The data already obtained are sufficiently convincing to cause this request to the profession to treat membranous croup as a contagious disease; that is, to advise isolation and disinfection, the same as in a case of diphtheria."

Chronic Nephritis without Albuminuria.—That the mere presence or absence of albumin, and the detection of or failure to detect the presence of tube-casts in urine, are not safe guides in the diagnosis and prognosis of chronic disease of the kidney, degenerative or inflammatory, would seem demonstrated by the results of a careful study detailed by STEWART (*American Journal of the Medical Sciences*, December, 1893, p. 654), who records a group of illustrative cases in which the presence of albumin could not, as a rule, be demonstrated, while tube-casts were only occasionally found. The symptoms to be looked for in cases of this kind are rather heightened arterial tension, with accentuation of the second sound of the heart, and a tendency to cardiac enlargement, diminished secretion of urine, and deficient elimination of nitrogen, headache, vertigo, breathlessness, impaired vision, and retinal changes.

In any case in which insidious changes in the kidneys are suspected and the presence of albumin and tube-casts is not demonstrable by ordinary methods, repeated examinations of the total twenty-four hours' urine should be made. The search for casts may be facilitated by centrifugation. Attention should also be directed to the quantity of urine excreted and the amounts of solids contained, particularly of urea and uric acid. The value of these observations resides in the fact that early recognition of the condition is essential to the attainment of the best therapeutic results.

The Ethics of Foot-ball.—Among the multitude of congratulatory letters received by THE NEWS as to its criticisms of foot-ball there have been a few from men whom we and the world delight to honor, urging that while the physical effect is as pernicious as we have contended, the moral and educational influences of the game are far worse than the physiologic effects, and that to these aspects the most attention should be directed. In reply we can only suggest that as a medical journal our province in this connection is chiefly surgical and hygienic, and that only so far as the moral and educational effects are bound up with, and exercise influence upon, the health of the community and the good of medical education, so far must the physician's criticism and domain extend. Those great guardians of the morals of the community, the lay-newspapers, have their chosen field undisputed. To them may be left the questions of the encouragement of betting, drinking, and general rowdyishness by the public professional games, and their evil influence on social progress and morals. The universities also should have a chance for a word. To them may be left the consideration of the lessons to be derived from whole pages of remarkable reports of the various "Thanksgiving" (*sic*) games as published in the great New York papers of December 1st. It is a most lamentable dis-

grace, this of our educational institutions, for advertising purposes going into the business of public amusement-furnishing, and encouraging public contests that the "sporting editors" of daily papers say are more dangerous and debasing than "glove-contests." It is enough for us that at every game there must be ambulances and a corps of surgeons, nurses, rubbers, etc., in waiting, to emphasize the medical and surgical aspects.

The Relation between the Testicles and the Prostate.—Apropos of the proposal to remove the testicles for the relief of prostatic hypertrophy, REGINALD HARRISON, in a communication to the *British Medical Journal* of September 23, 1893, relates the case of an elderly man with symptoms of increasing urinary obstruction, who, a number of years ago, importuned him to perform castration to prevent further growth of the prostate gland. The proposition was declined, but, by way of compromise, subcutaneous division of the vasa deferentia immediately below the external abdominal ring, where they are to be easily and safely reached, by means of a tenotome, was practised, first upon one side and then upon the other, at an interval of a few days. The further progress of the case is not known, other than that the patient was living and well six or seven years after the operation. If atrophy of the testicles will be followed by atrophy of the prostate, and if division of the vasa deferentia will lead to atrophy of the testicles, there are numerous and obvious reasons why the simple operation should be preferred to actual castration.

In the same connection POWELL (*British Medical Journal*, November 18, 1893, p. 1099) reports the case of a man, sixty-five years old, under treatment for prostatic enlargement, whose right testicle was removed on account of the presence of a neoplastic nodule. The left testicle was small and probably useless. The urinary symptoms soon disappeared, and examination some time later showed that the prostate was much reduced in size.

An Analysis of 1300 Errors of Refraction.—One of the most valuable things in medicine is a philosophic and detailed analysis of a large clinical experience in a specialized line of work. Such a bit of good work comes to us from Dr. W. F. Southard, of San Francisco, entitled *The Modern Eye*. With painstaking care, Dr. Southard has collated the statistics of his refraction-work and deduced therefrom many valuable lessons, mention of which we regret that want of space compels us to forego. The monograph (reprinted from the *Pacific Medical Journal*) is admirably outfitted with tables and charts that will be useful to all ophthalmic surgeons. One of the lessons, old it is true, but most sadly neglected, is the intimate association of low refractive errors with intense reflex disorders. "It would seem that no further argument is needed to show the necessity of correcting every such error."

SELECTION.

SOPHISTICATION OF "ANIMAL EXTRACTS."

To the Editor: In your issue of August 26th you published a communication of mine on Hammond's cerebrin, in which the presence of nitroglycerin was suspected.

The results of my chemical examination of that article, also of a bottle of Hammond's medullin, showed how well founded was that suspicion.

A few weeks later Dr. Hammond made public a reply, the essential part of which is that I could not have analyzed the genuine article, since I failed to find alcohol and boric acid in it.

Such a way to meet the issue was so weak, under the light of my statement of the true object of my investigation, that I was contented to let the matter rest without any further remarks.

Since then I have seen a circular issued by the Columbia Chemical Co., the manufacturers of Dr. Hammond's animal extracts, which says that I failed to find water, alcohol, boric acid, and animal matter in the samples examined by me.

Therefore the trade is warned that unscrupulous dealers get empty bottles of Dr. Hammond's products, and fill them with some dangerous imitation, and palm them off as the real article, out of pure deviltry evidently.

Let us bring back the question on its true ground. I never pretended to publish a complete analysis of Dr. Hammond's cerebrin and medullin, because that was unnecessary.

The only question for me to solve was whether the physiological effects of the two articles are due to some extraneous matter, namely, nitroglycerin, or to some ptomaïn.

A priori, there was a faint possibility that a six months' maceration of brain-matter might be attended with the production of *neurin*, or neurin and *cholin*, possibly *muscarin* also.

Those three alkaloids have decided and powerful physiologic properties, not entirely unlike those of nitroglycerin. The general tests for alkaloids failed to show their presence.

On the other hand, I obtained decided reaction, characteristic of nitroglycerin, or, I added, some other closely allied substance (some nitrite for instance).

Since the publication of my first note, I examined with exactly the same results, another *unbroken package* of cerebrin.

The original bills seen by me, show that the three samples were sold by the Columbia Chemical Co. (New York), to Messrs. Lehn & Fink (New York), who forwarded it to Messrs. Gale & Blocki (Chicago), from whom I received it unopened.

With high regard, M. DELAFONTAINE.

—*The Journal of the American Medical Association.*

Dr. Henry Leffmann, Professor of Chemistry and Toxicology in the Woman's Medical College, Philadelphia, chemist to the State Board of Health of Pennsylvania, Eastern District, a man whose character and scientific reputation are beyond all question, recently examined a sample of cerebrin obtained from the Columbia Chemical Co., of New York, by a well-known drug house, and delivered at his laboratory in the original package, bearing across the label of the three-cornered bottle the *fac-simile* of Dr. Hammond's signature. The quantity of material in a single sample is quite small, but Dr. Leffmann was able to get reactions for boric acid, glycerol, nitrates, and nitrites. He has, therefore, reached the same conclusions as Prof. Delafontaine.